Who Killed Cock Robin?

DO YOU remember with what interest you listened to that query when you were a boy? It was a gripping story. It moved right along to an answer. You enjoyed it because there was an answer to the question. You were left in no doubt as to who did the killing. The sparrow confessed he did it. The fly saw him do it and the bull tolled the bell when he died.

That's why we grown-up boys of business still entertain and enjoy questions which have answers to them. But we don't like questions without answers. Nevertheless, now and then a question will appear which we dislike to entertain because no ready answer seems available. And just such a query appeared in the paper industry sometime since, and still disagreeably persists, and no satisfactory answer has as yet been forthcoming that we have seen, so we have set out to be a "joy bringer" by herewith printing the question and proceeding to answer it.

The question is: "Who killed the paper market?" Most every mill man you meet will tell you that the paper market has "no life in it," which of course means that it is dead because persons or things without life are of necessity dead. That's logical. But the question that immediately pops out is: "Who did the killing?"

Now we have been doing a bit of Sherlock Holmes and Billy Burns work for sometime back, and we don't mind telling you right off the bat that we have the names of the miscreants who did the foul deed.

There are two of them.

They are sworn and deadly enemies of the Fair Paper Market.

For years, first one and then the other has endeavored to administer the killing thrust, but singly they could not. So about eighteen months ago they decided to work together for the accomplishment of their base business. Sure enough! The evidence of their nefarious success is the corpus delicti, the dead paper market on our hands. Dead? Why, according to some of the testimony we have heard recently, a salt mackerel is a shivering shimmy with St. Vitus' dance in comparison.

When we tell you the names of these two murderers you will immediately recognize them. They are no strangers to American industry. They have committed similar crimes before. They are the same two birds who contrived to give the knockout drops to the wheat business. They tried to kill the flour business some years ago, but were caught at it, tried, convicted, and sentenced to long terms in solitary confinement.

However, some mushy, sentimental governor or other, with an eye to re-election votes, pardoned them out, as is always the case when the public goes to sleep. Back they went to ply their industry-wrecking traffic. It's the only trade they know, and they know it well. Oh, don't gnash your molars and use language which will jeopardize your chances for a seat in Heaven, just because your Governor released two criminals who got to your particular treasure! Why don't you get busy, and instead of a Board of Pardons have a Board of No Pardons, whose duty it shall be to make certain that no maudlin executive may ever release any confirmed criminals to repeat their outrages upon any citizen?

What's the use in spending time and money for evidence and prosecution, when after conviction, you straightway forget and allow the same crimes to be repeated by the same criminals? Wotta life!

These were some of the thoughts we hatched while running down these assassins we are about to name. But we recalled that our function is "pitiless publicity." We of the press must do our duty, even in face of discouraging conditions, publish the facts, print the names.

The names of these two merciless murderers of our Fair Paper Market are:

Over Production and
Heavy Imports.

This fellow, Over Production, is a native of the United States, a gross-grown, overbearing bully. And Heavy Imports, as his name indicates, is a foreigner. Both are big brutes, and strange to say, they are related.

You see, Heavy Imports comes from the Over Production family abroad, and they are blood relatives to our domestic Over Production breed.

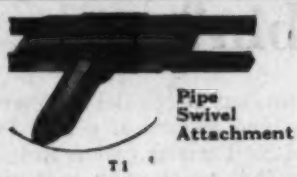
The name Imports is an alias as it were—a change undoubtedly made in order to facilitate his entry into this country. And we let him get away with it too. Further than that, we have also ascertained that his surname, Heavy, while indicative of his great bulk, is a Scandinavian patois for the English, Henry, or Hen for short, probably because he sets around on the docks of the ports of entry to the United States so much of the time.

Be that as it may, yet here they are, these two big, burly business busters, over-towering and breaking down our own Fair Paper Market to the death. They are the scamps that have done this scandalous thing. We have them red-handed in the crime. And the pity of it all is that our own Fair Paper Market has been putting up such a gallant, plucky fight to the finish, against domestic Over Production, and should have won.

But when the foreign devil, Imports, sinister and swarthy, who was born scrapping, who has everything to gain and nothing to lose, and who realizes that it is a case with him of grab-it-off-at-any-price from our own Fair Paper Market, or go hungry—well, when he threw all his huge bulk into the fight and took a sandbagging wallop at our Fair Paper Market, along with domestic Over Production (who ought to know better), why there was nothing to it. It was a case of overwhelming odds against Fair Paper Market. He had to go down, but not out yet.

There is the evidence in the case. It's all so cold-blooded and matter of fact. All you have to do is to look at the figures of both Over Production and Heavy Imports and be immediately convinced that the Fair Paper Market has not a chance on earth against them.

Who'll toll the bell?



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Scranton, Pa., 518 Union Nat'l Bank Bldg.
Cleveland, Ohio, 1519 Guardian Bldg.
Denver, Colo., 1751 Wazee Street
St. Louis, Mo., 606 Pontiac Bldg.
Detroit, Mich., 455 Book Bldg.

Milwaukee, Wis., M. & M. Bldg.
Boston, Mass., 141 Milk St.
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D-1

Malleable Roller Chain with A-42 and Pipe Attachments for Straw Carriers, or D-1 Attachments for Apron Conveyors handling packages or freight is an economical and serviceable type.

A-42

Coming Opportunities

A GREAT opportunity will be given to the pulp and paper industry during the coming year to put across their message to the public in a way that should result in a much greater demand for the product than has heretofore existed. Here is an opportunity for putting into effect at least one phase of that much-talked-of need of a modern publicity and sales method of selling the paper industry to the public.

Two very important events will be staged—one in the East and one in the Middle West. Their importance can be safely predicted, for the reason that both have been successfully demonstrated before.

During the week of April 7th, the Second Paper Industries Exposition will be held at the Grand Central Palace, New York City. The week of August 18th will mark the Third Educational Graphic Arts Exposition, to be held in the Milwaukee Auditorium, Milwaukee, Wisconsin. Both of these expositions offer exceptional opportunities to all who contribute to the manufacture of pulp and paper, because each will be held in the heart of a great paper manufacturing and consuming center.

True it is, of course, that the Exposition in New York City will be devoted exclusively to the display of manufacturing methods and uses of paper, while that in Milwaukee will cover the paper, printing and lithographing industries. The general plans of the former are well under way and formulated to provide a show which will be of great interest to the general public, as well as to those directly interested in the manufacture of paper and paper products. The latter will be of interest to the printers and publishers, who after all are the intermediary consumers.

We have emphasized the importance of these expositions first in their relation to the public, simply because the public and its demand for paper is at the bottom of the growth and prosperity of our industry—the more they know about paper, the more they will want it.

The fact that all paper manufacturing associations, as well as the merchants are to be in New York for their annual conventions during the week of the Second Paper Industries Exposition, will aid in making the 1924 Paper Week a big week for every department of the industry. The American Paper and Pulp Association and its affiliated organizations will be in session at the Waldorf-Astoria, as will also the National Paper Trade Association. TAPPI will have its big annual meeting during the week, and if last year's program is duplicated will have one of its general meetings at the Exposition. If this is done, the program will be such as to include problems of interest to the superintendents. The Exposition will afford an excellent opportunity for the superintendents to see displays of the most up-to-date machinery and equipment.

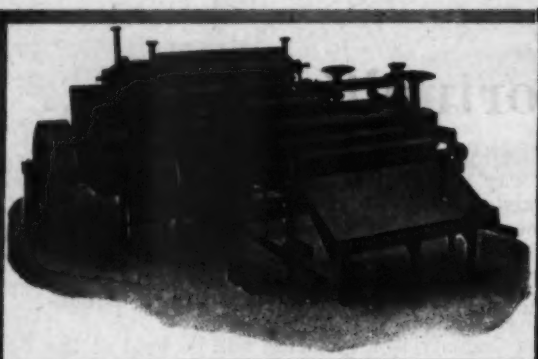
The general manager of one big paper plant made this statement in one of his weekly addresses to foremen: "All those interested are urged to attend this show, as excellent ideas can be picked up from such a display of equipment and many new ways of doing things can be seen. This should include all the foremen, as these expositions tend to broaden one's outlook and afford a splendid opportunity of seeing new things."

The value of the Paper Exposition to the exhibitor is shown in one instance where a paper manufacturing company which exhibited at the First Exposition secured enough direct sales as a result to fully compensate for the expense of the space taken, and is therefore increasing his space to be taken this year, and a machinery manufacturer who placed eight thousand dollars' worth of business in the course of Paper Week last year, has also taken increased space. Many who have already secured space have taken more than last year; several have doubled, while others have taken three, four and even five times the space used at the First Paper Show.

The Exposition space is being subdivided into sections, with the machinery, supply, and chemical equipment houses all segregated into their respective groups, paper and paper products having the center of the floor, and other products into another group, and so on throughout the entire main floor of the building.

Educational institutions, government departments, and others interested in various phases of the paper problem will be represented in the educational department of the Exposition. A daily motion picture will be part of the program; films pertaining to paper manufacture, woods operations, and production of specialties will be shown. It is planned to exhibit the finest collection of watermarks ever collected as an educational feature of the show, and the manufacturers are being asked to assist in collecting a representative series of special watermarks, as well for their inherent advertising value, as from the standpoint of their historical interest.

Two other events which will likely attract the interest of paper manufacturers, particularly those of Canada, are the annual Toronto Fair, which will be held in the late summer of this year, and the British Empire Exposition, to be held in Wembley Park, London, England, from April to October. The Toronto Fair usually contains the exhibits of several paper mills, which have always been well prepared and attractive. The Canadian Manufacturers' Association has taken a deep interest in the British Empire Exposition, believing that it will provide a wonderful opportunity for the display of Canadian products in friendly competition with the products of other countries of the Empire, and the paper manufacturers are co-operating to make the Canadian exhibit a success.



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All infringements will be vigorously prosecuted

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Used as Pulp Thickeners, Savealls, Pulp Washers and Water Filters

ADVANTAGES:

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Enormous Capacity	Minimum Repairs
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Will bear closest investigation from every angle. It separates knots and slivers from all kinds of pulp efficiently, continuously, automatically with negligible cost for operation and upkeep. Simple but rigid construction. Only best materials used. Operation in plain view.

60 TONS DAILY CAPACITY, STANDARD SIZE. WRITE FOR BLUEPRINT AND FURTHER INFORMATION

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Cylinder mould diameter, 36" or 40".

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Cylinder mould of best reinforced construction and properly supported with our latest design outside bearings.

Vat furnished either all wood or with cast-iron ends.

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Vol. 5 FEBRUARY, 1924 No. 11

Safeguarding Life and Health of Employees

By H. F. OBERMANNS

Hammermill Paper Company, Erie, Pa.

A GREAT deal has been said and done under the mantle of safety work in recent years and yet in the final analysis the principal reason for getting these things done is that it is good business. It is good business to protect and safeguard the life and health of your employees, because an injured or crippled employee cannot do as efficient work as one who possesses all his limbs. A man whose attention is continuously called to the unsafe conditions and surroundings of the machinery with which he has to work, cannot do perfect work and the employee who has to take the place of an injured man has to be educated, for which large sums have to be paid until he has reached the efficiency of his predecessor. There is, of course, the human element which must not be overlooked.

I just made the statement that safety work must pay and yet there are many paper plants as well as thousands of employees in the country, who do not believe in it and who simply do a minimum amount of safety work just because the law requires it or because they find that by doing so they are able to get a somewhat cheaper insurance rate.

In our own plant we have recognized the value and importance of proper safety work and while it has to be admitted that great improvements can still be made, we feel that in paper mills at least, and the writer has seen a great many of them in this country, ours can be considered a very well guarded plant. However, guarding pieces of mechanism is perhaps the smallest feature entering into real safety work. A guard will not offer in a great many instances, 100 per cent protection; it will not prevent accidents unless the man himself is imbued with the proper safety spirit, and here again what can you expect of the man if he finds that his immediate superior looks upon safety work only as a necessary evil. The real value of safety work can only be obtained if together with proper and efficient guards, everyone in the organization from the lowest to the highest earnestly strive to eliminate accidents which are wasteful in time, money and materials to the company as well as to the employee.

It is not the object of this article to go into detail as to the type of guards recommended and I shall only take a hasty trip through the plant, dwelling on the most important factors from the safety standpoint, in each department.

Wood Yard.—Enormous quantities of wood have to be handled in the course of a year, sometimes under very unfavorable conditions. In the spring the sap of the wood has not completely dried, making the logs slippery and hard to stand on or to handle. Summer rains very often increase this difficulty and in winter the logs frozen or encrusted with ice, from which the pick used in handling the wood very often slips, do not materially aid to make this job any safer. Very little can be done in this particular department in the line of safety guards and the best protection and insurance against accidents is a safe employee.

Wood Room.—A great deal of what has been said about the wood yard is also true of this department, although numerous mechanical appliances are in use in the wood room which unless properly guarded, are decidedly dangerous. One of the worst sources of accidents in a wood room are the old type disc barkers, which fortunately owing to their wasteful operation, are gradually disappearing. Wherever they are used, however, they should always be used in connection with a mechanical attachment which holds and rotates the stick of wood against the barking disc. In mills making fine grades of paper it is necessary to

trim and clean the logs by means of hand hatchets, and here again extreme caution on the part of the operator is the only safeguard that can be offered for his protection.

Acid Plant and Digesters of the sulphite mill offer numerous sources for possible injuries. The gases developed in such a plant if given in concentrated doses, are very suffocating and gas masks of the best type should be available at such location where they are readily available. Chip bins and blow pits of the digesters must be safeguarded in such a way that operators finding it necessary to conduct work in either will be promptly notified before a digester is either filled or blown. In another part of the sulphite mill bleaching power or liquid chlorine is used in fairly large quantities. This gas is much more poisonous than the sulphurdioxide gases used in the acid plant and proper precautions have to be taken particularly where liquid gas is used. The best recommendation in this connection is to have gas masks available, also water hoses wherever the possibility exists for a leak to develop.

Paper Mill.—The paper mill as a rule offers few hazards, largely because paper makers as a rule are skilled operators, who during their many years of preparation for their trade have become fully aware of the dangers connected with their occupation. A modern paper machine, however properly equipped with guards wherever possible, offer few hazards. The paper machine calender perhaps is still nipping off finger tips and no man except the operators entrusted with this particular job should be permitted to handle paper at this point. Perhaps the most dangerous part on the paper machine is the reel, particularly in mills where the old type upright reel is still in use. This is positively dangerous and inasmuch as the point between reels cannot be guarded it should be eliminated. The various types of drum winders, particularly those revolving in such a direction as to offer a "nip" on the operator's side, also have to be operated with the utmost care.

I purposely do not mention safeguarding clutches, pulleys, shafts, set screws, etc., as these things should be taken care of in any factory whether paper mill or otherwise.

In closing, I want to say a word regarding a factory organization such as a safety committee which can be of wonderful benefit. Such an organization should consist not only of the superintendents and executives of the plant (it is important that these should faithfully attend) but it should include men selected from the ranks of the operators as well. This mill committee should be changed at frequent intervals so as to give everyone a chance to serve on the committee and in order to keep interest alive among the operators. A safety committee consisting of the executives of the plant can easily decide where guards should be put and how they ought to be made, but that part of the safety committee consisting of the operators will see to it that the guards will stay where they are put. A Safety meeting in an industry should be considered as a meeting of first importance and you will soon learn that where safety work is considered as work of serious importance the men in the plant for whose benefit this work is largely conducted, will follow in complete harmony with this program.

Power Plant Management

The Economical Operation and Maintenance of Boiler Furnaces—Part I

BY ROBERT JUNE, M. E.

This is the sixth in a series of articles by Robert June, who is well qualified to write on this subject. The articles are written from the point of view of the managing executive and deal with the dollars and cents end of power plant operation and maintenance. Succeeding articles deal with such live topics as safe and efficient boiler operation and maintenance, what management should know about coal and ash handling equipment, steam piping, efficient turbine operation, etc. The service is timely and should prove of value to our readers.

THE furnace volume required for the complete combustion of any fuel is dependent upon a good many variables, so that satisfactory calculation of furnace volume is extremely difficult. Among the factors to be taken into account are the chemical and physical qualities of the fuel, the system of combustion, the shape of the combustion chamber, the draft and distribution of air and the thoroughness with which air and fuel may be mixed.

The least amount of combustion space is required with oil, where modern mechanical atomization is employed. The largest amount of combustion space is required with pulverized fuel. In between lie all grades of lump coal.

Furnace volume required is primarily dependent upon the thoroughness of the facilities for mixing air and fuel. Thus with modern oil burning equipment, the mixing is very largely done in the burner itself and complete combustion is secured within a

few feet of the tip. With low volatile coals the greater part of combustion takes place within the fuel bed or directly above it. With high volatile, long flaming coals combustion is not completed until the gases have traveled a considerable distance from the fuel bed, and can possibly only be made complete through the employment of ignition arches.

With pulverized fuel, in the present state of the development of the art, there is little or no mixing of the fuel and air prior to their injection into the furnace. As a result, very large furnace volumes are required, in order to assure ample room for each particle of fuel to find the particle of air which it requires without the admission of large volumes of excess air. Some day, perhaps, pulverized fuel engineers will succeed in designing burners which will so thoroughly mix the fuel and the air before their injection into the furnace, that combustion will be completed within a short distance of the burners. When this is done furnace volumes for pulverized fuel can be materially reduced.

Table I shows the B. T. U. fired per hour per cubic foot of furnace volume at very high efficiencies, and which thus represent probably the best attainable results in actual practice. For this table as well as for Table II, we are indebted to Mr. E. B. Ricketts of the New York Edison Co.

TABLE I.
B. T. U. FIRED PER HOUR PER CUBIC FOOT OF FURNACE VOLUME AT EFFICIENCIES OF ABOUT 80 PER CENT WITHOUT ECONOMIZERS.

Fuel Burning System.	B. T. U. per cu. ft. of furnace volume.
Pulverized coal	22,000
Chain-grate stokers	37,500
Underfeed stokers	64,000
Locomotives	70,000
Oil-steam atomization	85,000
Scotch marine boiler, hand fired	144,000
Oil-mechanical atomization	176,000

It was the practice ten or fifteen years ago for boilers to be provided with from 1 to 1.75 cubic feet of furnace volume per rated H. P. Practice in recent years has differed radically from this, very much larger furnace volumes being provided. Table II shows the cubic feet of furnace volume per rated H. P. of some of the important plants completed within the past five years.

The question naturally arises, are these increased furnace volumes more economical than smaller furnace volumes. The answer is that the larger furnace costs relatively more, but not proportionately more to build and maintain than the smaller furnace. The justification for the larger furnace must necessarily be found in increased boiler efficiency and capacity. It is the general consensus of opinion of combustion engineers that despite heavier maintenance costs the tendency towards larger furnace volumes is justified.

This justification is found in the higher evaporation rates and higher efficiencies now being demanded and secured. What we are doing is working existing equipment several times harder than was the practice only a few years ago. Despite increased costs of fuel, the cost of producing power is either remaining stationary or decreasing slightly. It is paying to work apparatus hard.

Conditions the Furnace Must Meet

As a result of the larger quantities of fuel going into the furnace with the higher evaporation rates, fuel beds are thicker than formerly and therefore draft must be increased. We have higher temperatures inside the furnace and, as stated, greater height and greater volume. The furnace, therefore, must have sufficient strength to support itself at all temperatures regardless of loads or stresses which may be applied to it.

TABLE II.
CUBIC FEET OF FURNACE VOLUME PER RATED HORSE POWER. (10 SQ. FT. BOILER HEATING SURFACE.)

Station	Chain-grate stokers	Under-feed stokers	Pulverized coal
Recent Stations.			
American Sugar—Baltimore	2.00	....	....
Kansas City	2.57	....	....
Dalmarnock—Glasgow	3.10	....	....
Barking—London	3.87	....	....
Calumet	4.45	....	....
Waukegan	5.75	....	....
Dodge Bros.	....	2.17	....
Seward	....	3.24	....
Colfax	....	3.45	....
Springdale	....	3.95	....
Hell Gate	....	4.23	....
Gennevilliers—Paris	....	4.50	....
South Meadow	....	4.56	....
Delaware	....	4.80	....
Lakeside	....	....	4.66
River Rouge	....	....	4.98
Cahokia	....	....	6.52
Older Stations.			
Waterside	....	1.05	....
Essex	....	1.95	....
Muscle Shoals	....	2.19	....
L. Street	....	2.43	....
Conners Creek	....	2.72	....

Inside the furnace we will have temperatures over considerable lengths of time of 2,800° to 3,000° F. While exposed to this temperature the furnace wall must stand up under the erosion and attrition of ash and clinker flowing over it. It must resist the attack of the fireman's slice bar while he endeavors to break off lumps of clinker and molten ash. The furnace lining must not be chemicaly active with either the ash or clinker, as such a condition will cause it to flux rapidly. Porosity must be at a minimum, otherwise there will be a considerable inseepage of air through the walls lowering the furnace temperature, wasting heat and fuel and hastening the spalling of the refractory in the furnace. Radiation losses must also be avoided.

These several requirements of the furnace; higher refractory quality, physical strength, surface hardness, low expansion and contraction co-efficient over a wide temperature range, low heat conductivity and imperviousness, are all of the greatest importance.

The Refractory

The particular requirements of the modern boiler furnace wall are so widely varied that no one mate-

rial can meet them all 100 per cent. Therefore, the tendency is toward the use of two or three or even four materials. Table III gives the thermal properties of various refractories.

Examination of the above table would give the impression that a satisfactory combination of materials for all practical purposes could be made from it. This would be true if we could eliminate the item of cost of material. Some of the refractories in this table, however, are so expensive that they can only be used in special ways. Therefore, it is necessary to rely upon fire clay products for the bulk of our boiler wall work.

Furnace Difficulties

Furnace deterioration usually starts at the joints between bricks. Every joint and every layer of binding material is a possible source of weakness.

Each brick has its individual characteristics of shape, size and uniformity of mixture of its component materials. Therefore, expansion and contraction of the various bricks in the wall are not uniform. Bricks not true to size and shape exert a side thrust against adjacent bricks. Bricks not properly baked and tempered or not uniformly mixed, crack with sudden temperature changes.

Probably the most prolific source of failure is the erosion of fire brick by molten ash. It is true this is not a problem where coals having ash fusion temperatures of 2,700° to 2,800° are used, but there are very few power plants today which enjoy the use of coals of this quality. Whereas, it is every day experience in thousands of plants to deal with coals the ash of which begins to soften at 2,100° and runs at 2,300°.

Ash erosion becomes a serious matter with pulverized coal or where underfeed stokers with forced draft are used. In such furnaces a veritable sand blast action is produced. The flames, carrying small particles of molten ash, are driven into the cracks and pores of the brick work. The surface then becomes a mixture of fire brick and ash, which has a much lower melting temperature than the fire brick.

Now if the temperature of the surface of the brick is lower than that of the molten ash, the ash will not penetrate into the brick to any great extent but will form a pasty coating over it. Then there will not be a great deal of erosion. If, however, the surface temperature of the brick is the same as that of the ash, due to higher gas temperatures and better insulation, some of the molten ash will penetrate into the brick and erosion will take place. If gas temperatures and insulation effect are increased still further so that the temperature an inch beneath the surface of the wall is the same as that of the ash, then the molten ash will literaly wash the brick away rapidly.

While we have just referred particularly to the increase in temperature of furnace gases, we must bear in mind that this is a matter over which we do not have any particular control, and further that the depth of penetration of high temperature in the furnace walls is largely controlled by the material with which the wall is constructed, as well as its thickness. Right away we see that this means a well insulated wall may really be much more expensive because of the rapid erosion of the inside walls, than the less efficient wall which will stand up a very long time because some of the heat is radiated from it.

Our problem, therefore, is to insulate our wall to just the proper degree in just the proper place, or else to provide some means of ventilating the wall, or better yet, to cool the wall by means of water or steam in such manner that the heat transferred to the cooling fluid may later be reclaimed for useful work.

When the use of insulating brick is being considered, it is well to remember that such brick may usually be used with entire safety in the construction of all sections of the furnace other than the high heat zone of the combustion chamber. Where the gas temperature is 2,400° F. or less, the insulation can be built in the wall as close as 9 in. from the inside face of the wall without detriment to the refractory brick work, provided calcined insulation of considerable high heat resisting quality is used. A survey of the temperature drop through any boiler setting will show that the high heat zone of the combustion chamber is of limited area.

In addition to the danger of failure of the brick work, there has been another reason for not placing insulating brick in the high heat zones in the wall.

TABLE III.
THERMAL PROPORTIONS OF VARIOUS REFRACTORIES.

Material	Fusion point degree Fahrenheit	Point of failure under 50 lbs. per sq. in. load degrees Fahrenheit	Thermal conductivity at 1832 degrees Fahrenheit B.T.U. per hour per degree Fahrenheit per inch	Specific heat at 212 degrees Fahrenheit	Resistance to spalling
Fireclay	3092	2462-2552	11.3	0.199	Good
Silica	3092	2912	12.7	0.219	Poor
Magnesia	2929	2696	22.9	0.231	Poor
Chrome	3722	2597	16.5	.....	Poor
Bauxite	3245	2462 or more	11.3	.....	Good
Zirconia	4667	2750	Low	.....	.....
Carborundum	4064	Above 3002	67.0	0.186	Good
Alundum	3722	Above 2822	High	0.198	Good

This has been due to the fact that the insulating brick heretofore available have shown considerable shrinkage under high temperature conditions. There are, however, now available insulating brick that have shown by test no shrinkage under pressure of 40 lbs. per square inch at 1,900° F. and but slight shrinkage at 2,000° F.

overloads may be more uniformly maintained with better efficiency. Moreover, in all types of boilers which are supported by steel structure and are not dependent on the walls for support, thinner walls can be used, the cost of construction reduced and space saved, when insulating brick are built in as part of the wall structure.

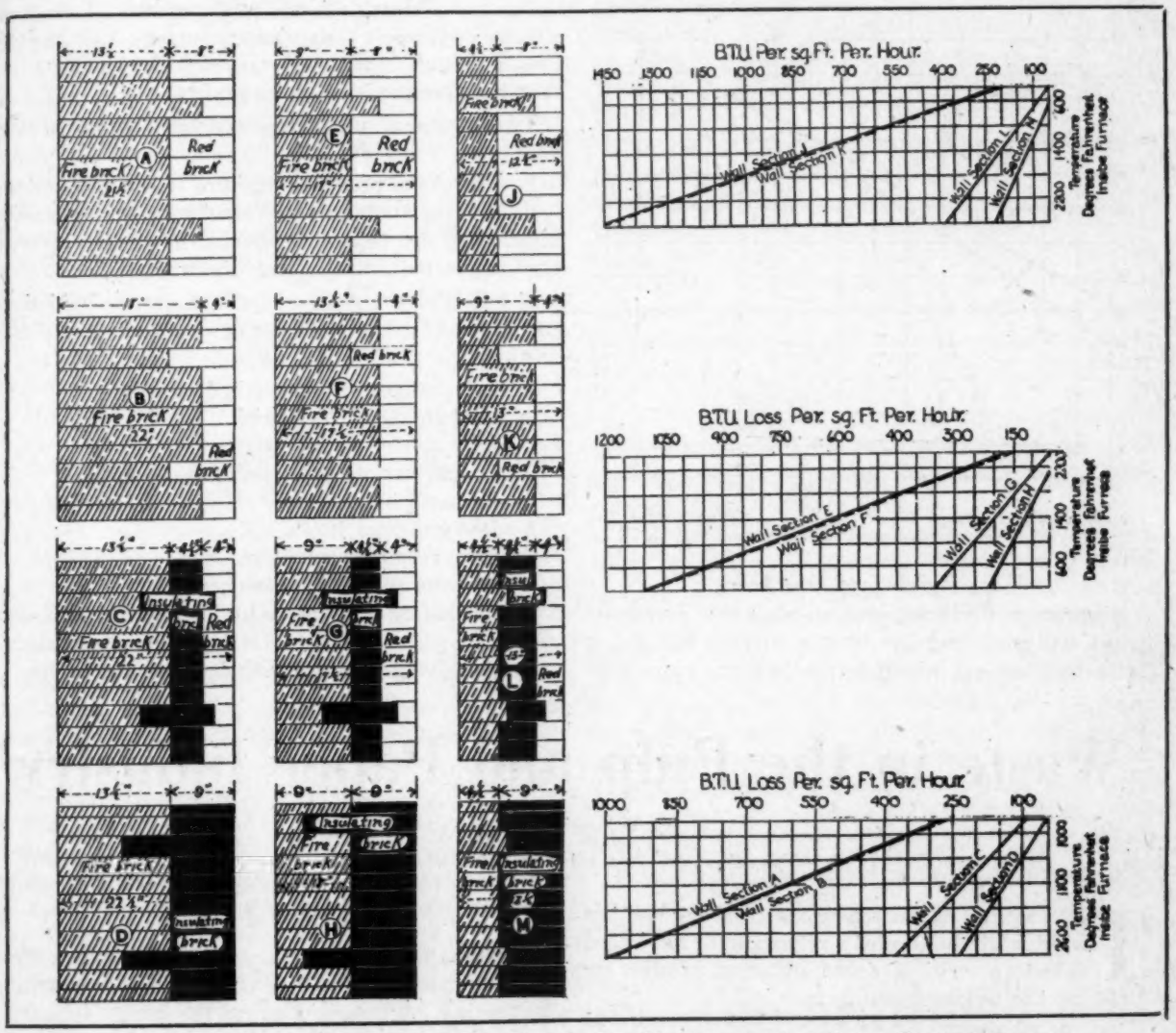


Fig. 1—Conductivity of No. 1 Fire Brick, Red Brick and Insulating Brick at Various Temperatures

Figure 1, plotted from the Bureau of Standards tests, shows the relative conductivity of fire brick, red brick and insulating brick at various temperatures.

Figure 2 is a graphic presentation of comparative losses through un-insulated and insulated furnace walls of standard thickness, and with different methods of construction.

By referring to the side wall sections B and C and D, the savings resulting from the use of insulating brick are shown to be very marked.

Among the advantages of insulated walls are, that

Keeping Down Maintenance

Frequent reconstruction of furnace linings and unnecessary fuel waste may be due to any or all of the following:

1—Use of inferior refractories.

2—Thick joints between bricks.

3—Cracks in furnace walls.

4—Lack of insulation.

5—Failure to make minor repairs.

The life of most furnace linings can be lengthened and their general efficiency increased by:

1—Proper selection of refractories.

2—Bonding with thin cemented joints; or

3—Monolithic construction of walls and arches.

4—Insulation properly installed as an integral part of the structure.

5—Frequent minor repairs.

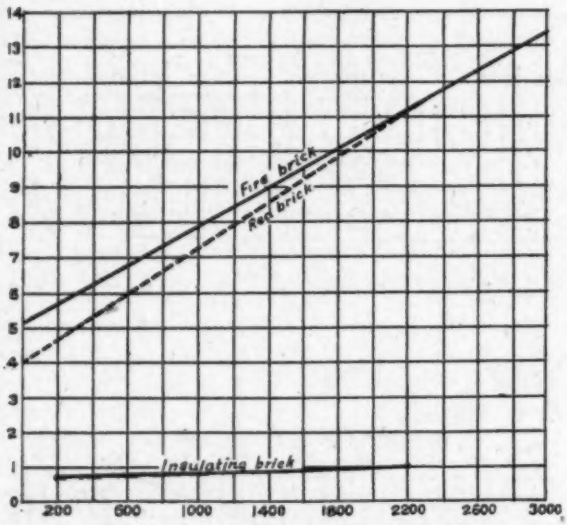


Fig. 2—Heat loss through furnace walls of different construction, showing advantage of insulation

The Brick and the Joint

High grade fire brick laid up with thin cemented joints will give long life to any furnace lining. A refractory cement which sets at normal room temperatures will bond the brick, which are dipped when laying into a thick batter of cement, then tamped or rubbed into place with a thin "push" joint.

The action of heat merely serves to strengthen the bond by fusing brick and cement together in a solid structure. The bond extends through the entire thickness of the wall.

Monolithic Construction

This method of constructing furnace linings has been gaining in favor and will no doubt be given increasing consideration by engineers.

Two means of monolithic construction are available:

1—The use of prepared mixture either wet or dry.

2—The reclaiming of old furnace linings by crushing the old fire brick and adding the proper percentage of plastic high temperature cement.

It has been found that monolithic walls for boiler furnaces effect savings both in construction and operation.

The advantages of this method include:

1—Reclaiming old fire brick.

2—Low cost of construction.

3—Longer service from lining.

4—Reduced infiltration.

5—Reduced heat losses.

6—Lower fuel consumption.

7—Operation at higher capacities.

In concluding our discussion of this subject next month we will deal with methods of furnace construction, bridge walls, flat suspended arches and baffles.

Waste in the Pulp and Paper Industry

By B. T. McBAIN

3rd Vice-Pres., Am. Pulp and Paper Mill Supts. Association

THIS subject is not a new one from my pen but what might be termed a rehash, but I have been asked to write a dozen different stories for 1924, on the following subjects:

1—Wood Room.
2—Power Plants, Water and Steam.
3—Fibre Mills.
4—Groundwood Pulp Mill.
5—Paper Mills.
6—Drying of Paper.
7—Pumping equipment.
8—Labor Saving Machinery.
9—Clothing of Pulp and Paper Machines.
10—Using Junk Machinery.
11—Finishing Room.
12—Selling your product.

The first one being the Wood Room, I will try and touch on the various points as I see them.

The Wood Room

Waste is a big subject in every department. Most mills start in with waste in the cutting and handling of the log, buying or logging the rotten or partly decayed timber with the good and thinking they are saving thereby. Again, most Western mills receive their wood with the bark on, both logs and short wood, paying large sums of freight, not alone on the bark, but on the moisture kept in the log by the bark. These mills pat themselves on the back, usually, and say they are getting the value of the freight in fuel, which is not only questionable, but absolutely a wrong idea unless the mill receives the wood without much, if any, freight whatever.

Most mills employ too much labor in wood yards and wood rooms because of insufficient labor saving equipment—more waste.

Usually the power equipment for the wood room is

given little or no attention; the wood room is too far from the show places of the plant where efficiency ideas are confined, the result being that one-quarter to one-half the cost of preparing wood is waste.

Many mills are equipped with drum barkers. I am not going to say drum barkers do not save wood if properly handled, for they do. We have eight drum barkers in our three wood rooms; but I am not at all in accord with the builders that they are the only approved way of barking wood. Some mills bark wet and others dry. We have tried and are using both methods. In two of our mills we do not have trimming barkers to clean up with before the wood goes to the chippers; but I feel it would be a good investment if we could so equip all our plants, for without them much good wood is wasted or spoiled trying to get the bark off, especially in winter.

At the chipper, much good wood is wasted in almost every mill from various causes.

1—Improper speed of disk.
2—Not enough power.
3—Dull knives.
4—Worn out bed knife.
5—Worn face of disk.
6—Improper set of knives.

All of these items have much to do with the size and kind of chip made, also the percentage of sawdust and long or short chips. These have much to do with the amount of screenings and knots in the resulting product.

True, the chip screens, if properly set and handled, will reject the chips or slivers which are too large and a rechipper can be employed or chips fed back to the chipper itself, but such chips are not worthy of the name and only a very small percentage really goes into pulp-waste.

Many mills have the wrong idea that different kinds of woods can be satisfactorily cooked together, and that green and seasoned timber are of like calibre. Both these faults cause waste. New potatoes and old potatoes never come out of the pot the same, when cooked together.

The handling of the waste from the wood mill to boilers is another item of waste in most mills and where splitters are used in the separating of the good wood from the rot, or vice versa, much good wood goes into the fuel and much fuel goes into the pulp pile or helps spoil what otherwise might be a marketable product. Waste. As this story was to touch upon the wood room alone, I will confine myself to that subject.

Many plants in winter keep their wood rooms as warm as other parts of the plant and waste much good steam in doing so. There is nothing about a properly designed wood room requiring heat, and much better results are gotten where only the cold cutting edge is removed from the temperature. It is one of the necessities of mill construction that wood cars must remain out of doors, and it is of equal necessity to get the wood into the mill for preparation. With necessary openings for this purpose, a room heated to usual paper mill temperature is necessarily very wasteful as it is impossible to heat the great big out doors, much as some mill men seem to think it possible and endeavor to do so.

Another waste is in the scaling of the logs and wood. A good scaler knowing the tricks of those delivering wood, will many times save his monthly salary every week, which otherwise would have been lost.

A pulp wood scaler will not accept logs which would be accepted by a saw mill man, though many wood contracts have had the idea that what cannot be used at the saw mill will make good pulpwood. This is a mistaken impression and when such wood is accepted by the pulp mill scaler, is one of the worst sources of waste in the pulp industry.

The second story listed above will appear next month, if all goes well.

Cost and Factory Accounting

BY H. M. GRASSELT

A MANUFACTURING organization may be divided into three principal sections, viz., the administrative department, the manufacturing department and the sales department. The success of the whole rests upon their co-ordinate efforts. Since each unit contributes its charges to the final cost of the product, their individual efficiency and economic management will be reflected in the profits and prosperity of the organization.

The administrative department adopts and effectuates policies that govern manufacturing and selling, while the sales department is responsible for the marketing of the product at profitable prices and in volumes large enough to insure continuous operations. The manufacturing department is the lifespring of the organization. If operating and functioning inefficiently, production costs will be excessive and perhaps the product itself inferior to competitive lines. Neither a high-calibre executive nor the best salesman can under such condition save the organization from ultimate ruin.

The ability of the manufacturing department suc-

cessfully to meet all contingencies and obtain maximum results depends on the adequacy and condition of its equipment, correlate efficiency of help and supervision and, last but not least, an accurate method of ascertainment of operating costs.

The use of a cost system will tend to reduce the cost of the product, because it records all operating charges, time and production and thus offers a means of adopting corrective steps for the elimination of inefficiency. It lessens the danger of selling the product at unprofitable prices and, furthermore, furnishes the administrative department with vital information and statistics as to the profitableness of its individual lines of goods and renders feasible the introduction of effective policies in regard to their manufacture.

Fundamentals of Cost

The principles of cost accounting are uniform throughout the industries, though the methods of obtaining data may differ widely. To install, build up and supervise a cost system to a point of absolute dependability and highest usefulness requires a thorough knowledge of accounting and an intimate understanding of manufacturing conditions.

A cost system may be divided into two ordinate sections, namly, cost accounting and cost finding. Both terms are often confused or used indiscriminately as to their true significance. Cost finding denotes the practical end of cost work and consists chiefly in collecting facts and figures covering the various phases of manufacture. The execution of this work requires certain forms that are well-adapted to the needs of the respective operations and processes. There should be comparatively few forms in a good cost system and these few must be simple and readily understandable, as they are intended for use in the mill. Much educational work has to be done before these forms are properly filled out in the respective departments so that they record facts and not guesses.

Cost accounting is by no means merely the work of compiling and summarizing of collected data. It represents the scientific part of a cost system. In order to comprehend and carry out the work in accordance with the underlying principles of accounting, an analysis is required of the components that make up the manufacturing cost and their correct application to and distribution over the individual processes of manufacture.

An appropriate co-ordination of the correlate functions of cost finding and cost accounting will procure the end in view—an effective and thoroughly reliable cost system.

Components of Factory Cost

The principal components of manufacturing costs are Material, Direct Labor and Overhead Expenses (Burden). The cost of materials and labor constitute the prime cost. Prime cost and manufacturing overhead expenses represent the factory cost. Factory cost and administrative and selling expenses go and make up the total cost of the product.

Material. The cost of material is, as a rule, the invoice price plus in-freight. In order to maintain conformity of controlling accounts in the general ledger and records, such as stores records and requisition on stores, that are intended to exhibit the cost of materials used, a definite and uniform classification conformably to their most logical physical division has to be adopted. In a fine paper mill, for instance, this classification would cover: (1), rags—in various sub-classifications, if necessary; (2), separate accounts respectively for domestic bleached and unbleached sulphite; (3), separate accounts respectively for foreign bleached and unbleached sulphite; (4), soda pulp; (5), alum; (6), sizing and so forth.

Materials put into production are debited to the goods in process account and credited to the materials account. The quantities issued and chargeable against certain production orders are entered into cost sheets and summarized at the completion of a production order or the end of a cost period.

Direct Labor. Labor cost is compiled by departments from the payroll. A well-designed payroll, appropriately subdivided into departments or production centers, will facilitate the necessary allocation of direct labor cost. Comprehensive records of labor cost and its effective control serve the purpose of gauging the efficiency of labor and point out means of increasing production at lower costs.

Labor is easily wasted without leaving traces. Records covering all activities will indicate irregularities and lead to the introduction of corrective measures.

Manufacturing Expenses. Overhead (Burden) includes such charges as maintenance, taxes, insurance, depreciation of factory buildings and equipment, superintendence and other indirect labor, miscellaneous supplies, auxiliary departments (power, heat and light) that contribute indirectly to the manufacture of the product.

Apportion of manufacturing expenses requires departmentalizing of the plant. A fine paper mill, for instance, may be divided into the following departments and units:

(1), Rag Room; (2), Bleach Boiler; (3), Washers; (4), Pulper; (5), Beaters and General Paper Machine; (6), Paper Machine No. 1; (7), Paper Machine No. 2; (8), Loft and Air Driers; (9), Sheet Calenders; (10), Platers; (11), Auxiliary Departments, such as steam plant, power plant, buildings, millwrights, general plant and shipping.

Sub-divisions may be established, if desired. In distributing of manufacturing expenses, extreme care must be exercised to prorate them equitably and in proportion to the individual contribution of the

respective unit or department to the total factory cost.

Cost Finding

All expenditures for raw materials and labor (direct cost) plus manufacturing overhead charges are summarized at the close of an accounting period into a statement of manufacturing cost of goods shipped, as follows:

Material:

Inventory at beginning of accounting period	$	.....
Purchases		.....
Returns and allowances		.....
Labor		.....
Total	$	.....
Less: Inventory at close of last accounting period		.....
Total direct charges	$	.....
Manufacturing Overhead Charges:		
Depreciation, taxes, insurance	$	.....
Repairs on buildings and equipment		.....
Supervision and other unproductive labor		.....
General supplies		.....
Auxiliary departments (power, heat, light)		.....
Total manufacturing overhead charges	$	.....
Total manufacturing cost	$	.....

INCOME AND EXPENSES

Gross sales to customer	$	.....
Less: Allowances for freight and cartage		.....
Less: Allowances for returns		.....
Net shipments	$	.....
Miscellaneous sales (scrap, etc.)		.....
Total income	$	.....
Manufacturing cost of shipments (less increase in paper inventory through returns)	$	.....
Gross profit	$	.....

While this statement represents an accounting for and a summary of all expenditures incurred by the manufacture of the product, the thus obtained price per pound of paper is of very little relation to actual selling prices, unless the mill is in the fortunate position of being able to run year in and year out at its normal capacity.

However, there are contingencies that will restrict the normal operations of a mill. Lack of orders in a period of industrial depression, low water during summer months and other factors reduce the operations to below normal. While under such conditions expenditures for materials and labor logically will decrease in proportion to the extent of idleness, certain items of manufacturing overhead expenses go on. Labor charges also may not decrease in so large a measure as might be assumed, as in practically every paper mill the skilled help is retained during periods of idleness and employed at unproductive labor in order to keep the organization together. Therefore, manufacturing costs based upon actual expenditures under less than normal operations, will become excessive and disproportionate to selling prices. The law of supply and demand constitutes the dominating factor in the determination of selling prices, and the manufacturer who is unable to continuously run his plant at normal capacity, cannot expect a higher price for his product in order to make a profit on lots that were manufactured in a period of abnormal operations.

Since paper manufactured under adverse operating conditions incurs the loss during the process of manufacture and not in the subsequent sales transaction, the cost of idle capacity must be disposed of through the profit and loss account. Consequently, manufacturing cost and cost of idle capacity should be treated individually in order to establish a true basis for selling prices. A means of obtaining this result may be found in budgetary control and resultant cost standards.

Budgetary Control and Cost Standards

Cost standards and production standards are based upon results of operations that have not been impeded by abnormal industrial conditions. In establishing standards, all limitations to production within the mill itself, like allowances for repairs, unavoidable shut-downs and so forth, must be taken into careful consideration.

A publication of the fabricated products department of the Chamber of Commerce of the U. S. states that eighty per cent or less constitute a normal operating basis for many industries. Doubtless each paper manufacturer has his own ideas as to what the normal operation of his mill is. In a fine paper mill, ninety per cent may be considered as a fair basis for normal.

An appropriate analysis of books and records of past performances and experiences will furnish fundamental figures on which to base cost standards and standard production. Assuming, records in a fine paper mill disclose the facts, that during the last few years each paper machine was operated at the average of 500 hours a month, and yielded in the same period an average production of 250,000 lbs. of paper. The mill would take these figures for its normal production and consider 500 lbs. of paper per machine hour as its production standard.

It may be readily concluded, that the standard, obtained under certain conditions, should be main-

tained at subsequent periods under identical conditions.

Operations and processes in other departments and units can be based on the standard production obtained on the paper machine, their performances analyzed and investigated and respective cost standards established accordingly.

Based upon the results of investigation and analysis of past manufacturing expenses during what is considered normal operating conditions, an expense budget can be worked out. Taking again the paper machine as the fundamental determinative of plant activities, an expense budget for that unit would represent the following details:

Normal Expenditures: (One month.)

Labor	$ .....
Supplies	.....
Fixed Charges	.....
Auxiliary Departments	.....
Beaters and General Paper Mach	.....
Totals	$ .....

In another column opposite the normal expenditures the actual expenditures incurred in the same period may be entered for comparison.

If, for instance, the normal expenditures for that particular paper machine for one month aggregated $5,000.00, and the normal operating standard has been determined as being 500 machine hours per month, the standard rate for the calculation of cost for this unit will be $10.00 per machine hour. Similar budgets are to be set up for all other departments and units, so that the various processes of manufacturing are covered individually and their respective budgets collectively constitute the predetermined normal expenses of the mill as a whole.

It is, of course, imperative, to effect an adequate distribution of all fixed expenses over the various departments. Especially costs of power generation and transmission must be allocated to the individual department and unit in direct proportion to its consumption. The items comprising fixed charges, as stated before, are not at all contingent upon the cost of materials, labor and volume of production and their distribution is made independently thereof.

The value of predetermined cost standards is apparent and needs no further emphasis. They not only offer a basis for accurate costing of each process and product, but also are invaluable in price-making and estimating.

Other details pertaining to the subject of cost and factory accounting will be treated in a subsequent issue.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Lighting the Mill and Home

A GREAT many apparently successful business men seem to have peculiar notions about efficient lighting methods. This, I have noticed from time to time in journeying about from town to city and calling upon various firms. Perhaps you have noticed but never thought about the poor light men provide themselves and their help as well. I have found, for instance, that it is very common for a man to use a single little desk lamp of insufficient power for lighting his work. The lamp is usually cheap in appearance and price. Cheapness often seems to be a part of men's efficiency ideas, and so they call an expensive lamp a luxury and out of place in the business world. Workmen are compelled to labor under the same conditions, and thereby a considerable saving is made in the matter of first cost of lamps.

Very often these "higher up" men work under their poor lights from eight to ten hours per day, and their eyes are tired. Yet, as soon as they get home they insist on entirely different lighting. At home they want the best. Reading the paper at night they complain at the merest shadow. They are surrounded with the best that can be had, but with tired, overworked eyes, they cannot make full and comfortable use of the good light and so simply sit around, smoke, talk, and retire early. These men use their "good" lamps about two or three hours per day and their "poor" lights from eight to ten hours per day and often more.

It may be all right to give a paper mill or workroom a plain, barn-like appearance in order to enjoy home life all the more. But the five senses should be protected and cared for as well in one place as in the other. If you or your employes are miserable during working hours, due to poor light or to any other cause, you can be sure that production will suffer. And if they are miserable during the day it isn't easy for them to become happy over night.

Light is a subject that has been given a great deal of attention of late in connection with production. It is well worth considering carefully from a purely economic standpoint. From that point of view it will

invariably be found that not one of these four senses of the employer or employee should ever be allowed to suffer unnecessarily—seeing, feeling, hearing and smelling. The other sense—taste—is generally "up to the individual himself or herself." Good light, proper temperature, minimum noise and absence of sickly or irritating odors are all important economy factors.

Clean Steam

CLEAN steam for turbine and engine operation is essential in these days of high steam speed, high temperatures, and high pressures.

It is not uncommon to find deposits of scale or dirt in engine cylinders and on turbine blades. Sodium sulphate, dirt, and calcium carbonate are the principal offenders. Not only do the impurities clog but they cause damage by cutting turbine blades and valve discs, making traps and valves inoperable, ruining engine cylinders, etc.

In order to avoid these troubles, one of the simplest methods is the installation of a steam parifier, the function of which is the elimination of moisture. By getting rid of the moisture all dirt is eliminated also, because it is only the water in steam that carries over the impurities. Dry steam cannot carry scaling impurities.

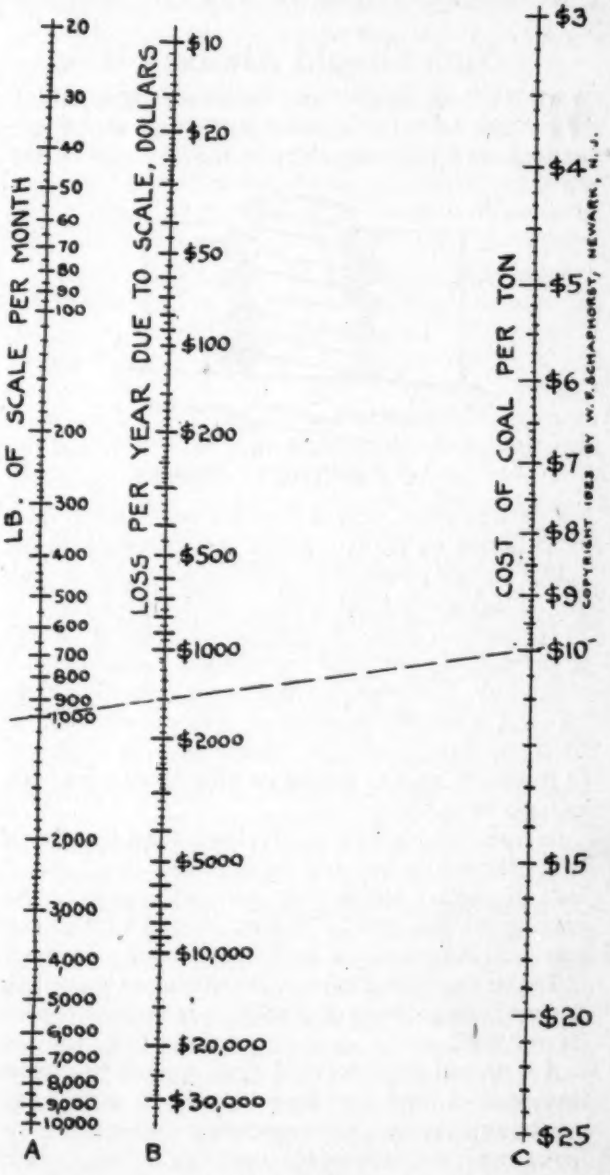
Although purifiers are installed principally to make steam clean, there is also a thermal saving involved. This saving is sometimes small and sometimes it amounts to a great deal. By removing all moisture, superheat can be increased. Hence from a heat standpoint, when using superheated steam, one can count on an increase of about 17 degrees to every 1 per cent of moisture removed.

Also, turbine manufacturers give the reduction in steam turbine water rate of 1 per cent for every 12 degrees increase in superheat. If 2 per cent of moisture is removed the superheat would therefore increase 34 degrees, which would be equivalent to almost 3 per cent reduction in turbine water rate. One can easily figure for himself what this amounts to during an entire year. It may mean that the purifier will actually pay for itself within the first year as an economizing device, and in addition the owner gets clean steam and machine protection.

How Much Does Boiler Scale Cost?

NEARLY everybody knows that scale in a boiler is expensive. Not enough of us realize, however, how expensive it really is per year. The accompanying chart has developed with a view to emphasizing the importance of keeping boilers free from scale; in other words, to drive home the fact that boilers should be kept CLEAN.

The chart is very simple and easy to use. Merely connect the number of pounds of scale cleaned out of the boiler per month, in the left hand column (Column A), with the cost of the coal per ton (Column C), and the intersection through Column B gives the annual cost of the fuel per year. For example, if you clean 1,000 pounds of scale out of your boiler, or boilers,



per month, and if the cost of your coal is $10.00 per ton, the dotted line drawn across the chart shows that the loss per year due to scale is $1,500. As will be noted the dotted line connects the 1,000 in Column A with the $10.00 in Column C, and the intersection through Column B gives the answer as $1,500.

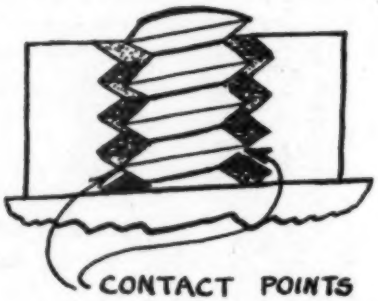
The range of the chart is great enough to take care of almost any boiler or battery of boilers ranging from 20 pounds of scale per month to 10,000 pounds per month, and including all varieties of coal from $3 per ton to $25 per ton. Between its extreme limits

Column B will give losses varying all the way from $10 per year to $30,000 per year.

The writer trusts that a study of this chart and its application to actual cases will have the desired effect, namely, that of keeping boilers clean and thereby saving much fuel and money. The present unnecessary annual losses due to scale are prodigious.

Nuts Should Always Fit

MANY "mechanics" and repair men never think of the fact that a poorly fitting nut should not be used on a bolt, especially if the function of the



bolt is important, and if it must resist much of a pull. In fact poorly fitting nuts should never be used.

This sketch shows that a nut of a certain thread, say 12 threads per inch, can be placed upon a bolt of 10 threads per inch. It depends upon the thickness of the nut. If too thick you can get it on only part of the way. However, too many poor workmen think, "Well, if it will go on part way, why doesn't it go on all of the way?" and then force it on with a wrench. In forcing it on, the thread on both the nut and the bolt are ruined.

In cases of this kind it is evident from the sketch that only one thread can be in contact, and that it isn't in contact all the way around because of the varying pitches. And if the nut is so long that another thread comes in contact, the second contact will be on the "other" side of the thread, so that when the nut is forced on it does nothing more than oppose its own self.

Nor should nuts be used that are too big, even though they have the same thread and seem to fit excepting that they are very loose. Where nuts fit in that way, they are held by the "tips" of the threads only and it doesn't take much of a blow to shear those tips off, as you have perhaps learned through experience.

In a nutshell, use only nuts that fit.

The Cost of Avoidable Belt Slip

AVOIDABLE losses are the ones to stop, always, especially if they can be stopped at small expense.

Never before have we understood the strategic and money value of coal as thoroughly as we do now. Never before has it been so necessary for us to save, even though considerable money must be spent in order to effect the saving.

We can save by installing economizers, for example, but it takes considerable time to select, order, get, and install an economizer, and what is more they cost enough to make one consider seriously before investing. The same is true of feed water heaters, condensers, better steam turbines or engines, and other large machinery of this sort. Soot cleaners don't cost so much and generally pay well as an investment. The same is true of CO_2 recorders. Lubricants, ball bearings, chain drive, etc., all come in for their share of attention as coal saving equipment.

However, one of the very simplest losses to overcome is belt slip, and since belts are used to so great an extent in paper mills, it will pay to look into the matter with more thoroughness than has been given it in the past.

Temperature and Weight of Steam

IT IS often desirable to know approximately the temperature of steam corresponding with any given pressure. Also the weight of 1 cu. ft. of the steam may be wanted. I have gone through my steam table and have selected all pressures divisible by 10 up to 250 lb. per sq. in. This little table will prove useful in an emergency.

For example, what is the weight of a cu. ft. of steam at 110 lb. gauge pressure? The answer is: 0.278 lb. What is the temperature at that pressure? Answer: 344 degrees F.

Pressure lb. per sq. in. Gauge	Temperature Deg. F.	Weight of 1 cu. ft., lb.
0	212	.037
10	240	.061
20	259	.084
30	274	0.106
40	287	0.128
50	298	0.150
60	308	0.172
70	316	0.193
80	324	0.215
90	331	0.236
100	338	0.257
110	344	0.278
120	350	0.299
130	356	0.321
140	361	0.342
150	366	0.363
160	371	0.384
170	375	0.405
180	380	0.426
190	384	0.447
200	388	0.468
210	392	0.489
220	396	0.510
230	399	0.531
240	403	0.552
250	406	0.573
300	421	0.679
350	436	0.785
400	448.4	0.892

Heat Transmission

AN excellent paper on heat transmission through insulation is to be found in "The Transmission of the American Society of Mechanical Engineers" by L. B. McMillan. For rough computations, accord-

ing to Gebhardt, the loss of heat from bare pipes and drums may be taken at 3 B. T. U. per sq. ft. per hr. per degree F., difference in temperature. The position of the pipe, its exposure to cold air currents, its size, etc., have much to do with the actual heat loss.

To determine the heat lost from white canvas covered piping of any thickness, "place a thermometer under the canvas and another in the air 4 or 5 ft. from the pipe." Subtract the low temperature from the high and call the difference t. Then substitute in this formula: $H = \frac{390t + 220}{328 - t}$ = the heat loss per sq. ft. of outer surface covering, B. T. U. per hr. This is a modification of the C. M. Sames formula originally derived from a curve by L. B. McMillan (Tran. A. S. M. E., 1915). This curve, the author said, "is perhaps the most valuable of all the results contained in this paper."

Hydration and Beating

By WILLIAM NASH

FROM practical experience, I feel that hydration is but practical judgment in the handling of distance and the weight of the beating rolls in a given length of time, which depends upon the condition of the beating rolls and bed plates, and that only the proper beating and drawing of the fiber gets the required results. A man must have very good judgment to handle different kinds of stock. He must depend on the feel and smell of the stock for results, but how many men can you find that will be particular enough in these days to watch every beater, day in and day out, the year around?

I have read with interest the paper of F. Jenkins, a practical beater man of Croxley Mills, London, England. I believe, from his paper, that he knows just how to handle the roll on different grades of paper and probably gets better results. If they have the third shift it would mean three qualities from one small mill in making the same grade of paper in twenty-four hours run, and I doubt if the next run would be an exact duplication of the product wanted.

I don't believe there are two men in the whole paper industry that can weigh and handle a beating roll by sound or feel and get the same results and an absolutely uniform product. This is what prompts me to express my views, as I know the mills on high grade papers have been trying for years to get a uniform quality of paper. I know also that the machine builders are ready to co-operate with the mill men if they understand the situation and have some points to work on.

Mr. Jenkins says the ideal beater roll for a 400 pound Holland beater should be three feet and six inches in diameter and less than two tons in weight; speed 180 revolutions per minute of 1,980 feet circumference travel. I have heard of a certain company that had approximately the same equipment in size of rolls and beaters as the beater Mr. Jenkins speaks of, and were getting out a very satisfactory quality of ledger and bond paper. They decided to put in larger beaters with larger rolls. They could not get the same results and were compelled to go back to the small beater with the small rolls, all because their organization could not weigh the large rolls by feel or sound.

I am satisfied that the beating engine is a long way from being perfected to get the results that are required on the finer grades of paper, and as it is almost impossible for the practical beater man to improve on the machine he is handling, on account of the large expense that it would cost him.

This leaves us with the Holland beater, which is 150 years old, for a modern up-to-date equipment. I believe that a beating engine should be designed to beat and pound the stock and should not come in contact with any cutting edge, only when passing through the refining engine for the final treatment.

Hydration is nothing but drawn and mashed fiber beaten full of water. The more hydrated the wetter it becomes and the harder to extract the water from either on the wire or press, or drying cylinders, but the strength and weight is added to the paper and a great many grades of paper can be obtained from the same furnish of stock through the different methods of beating by trained men.

I would like very much to hear from other superintendents and beatermen, who care to say something on the subject. We might be able to give the machine builders some points, whereby a real beater will be perfected and put on the market that will mechanically make a uniform sheet of paper at all times and save power and a lot of worry to us all.

I wish to add further, which might throw some light on the subject, that if a Holland beater was furnished with new linen stock and properly drawn and beaten for twelve hours, that the entire weight of a two ton roll could be let down on the stock for two hours without weakening the stock. The only damage would be discoloring the stock. Fine and strong grades of paper must use the beating method. Coarse grades are prepared on the grindstone, which requires attention also, to get the required slowness of stock for high speed machines.

An Engine-Room Pointer

Where an engine foundation rests on soil, gravel or loose rock, trouble is likely to arise in preserving the engine-shaft alignment unless the bed and outboard bearing of the engine are supported on a monolithic foundation. For that purpose concrete foundation beds are usually made L-shaped, having the main foundation bed extended under the flywheel pit and the necessary distance beyond it for receiving the pier for the outboard bearing.

Editorial Comment

By WILLIAM SIBLEY

Bonus Costs in Home Town Figures

ONE reason why the bonus advocates have gained the ear of so many people is because too many have done nothing but beat around the bush. We talk, but we don't say anything.

Those who can talk (or at least do)—the politicians—have been anything but frank and straightforward. When on the bonus question they have been evasive and insincere. They have been long on "undying gratitude" and patriotic fervor—dampened only by the regret that the bonus must have a special tax of some sort. They usually have said that a bonus would be a fine thing—some other time.

This sort of talk only half convinces the opponents themselves—and it makes the advocates mad. The only public man we know who has come out flatfootedly and unmincingly stated his convictions on the matter is President Coolidge. He, at least, has paid the "veterans" the compliment of being frank and honest. He said he wasn't in favor of a bonus—in words of one syllable—and that's all there was to it.

Now, the bonus advocates assert that, if the President vetoes the bonus bill, they will pass it over his head. Just what this means to you and to everybody else is just this:

Figuring on a cash bonus, as laid down by the advocates themselves, an appropriation of $1,548,000,000 would be necessary. This political tip to the ex-soldiers, at 5 per cent on 50 years, would eventually total $5,518,000,000. Therefore, principal and interest (the advocates' own figures) mean $51.10 for every man, woman and child in the United States. If the reader of this editorial is the father of two children and the sole support of his family, the bonus, on this basis, would cost him about $204. It means an indebtedness of $25,655 for every village of 500 people. Over $50,000 for every town of 1,000.

Now Secretary Mellon thinks that the bonus cannot be paid completely with this sum. He estimates its original cost at something close to $3,845,000,000. This total, at 5 per cent on 50 years, would mean $13,457,000,000. The per capita cost, according to Secretary Mellon, would be in excess of $128.16. Over five hundred dollars for the head of a family having two growing children.

There are those who are willing to "split the difference" and let it go at that. There are others who say this is only the beginning—that in twenty years some "patriotic" senator will arise and in a loud voice introduce a bill pensioning the soldiers then remaining—that in another twenty years, another senator will advocate raising the pension. They substantiate their contention by pointing to our experience with the Civil War veterans.

The writer feels just a bit keenly on this subject. And he isn't hampered in expressing his views because he spent over a year in France with the rest of the fellows. He is bitterly opposed to the bonus. He feels that everything possible should be done for the disabled. If the rest of the ex-soldiers earn their living with as much honor as they served their country—they'll get along all right.

Calculating Watt Transmission by Belt Width

OVER the luncheon table an editor friend of ours told us of a very simple belt transmission rule, which we would like to pass on to you. Simply this:

"A single belt running one foot per minute will safely transmit one watt of electrical supply energy per inch of belt width."

As an example: If a single belt, one inch wide, runs 5,000 feet per minute, it will transmit 5,000 watts. If the belt is 10 inches wide it will transmit 50,000 watts, at the same speed of 5,000 f. p. m.

5,000 watts is equal to 5 kilowatts.
50,000 watts is equal to 50 kilowatts.

If it is desired to convert the watts into horsepower, multiply the number of kilowatts by 1.34. Thus 5 KW x 1.34 equals 6.7 H. P.

For light double belts add 25 per cent. For heavy double belts add 60 per cent.

Tell Them the Truth

IN YEARS agone, advertisers were wont to use the superlative in nearly everything they said. Exaggeration was common practice. "Knocking" the competitor was sometimes employed. Truth, very often, was conspicuous for its absence.

In modern advertising we no longer use such methods. Seldom does an advertiser say his products are "best." Rather, they are "better." We have found the old methods unethical—unsound—unprofitable. Truth overcame untruth.

There are labor leaders and organizations maintained under the name "labor" who seek nothing save self-emulation, power, or the overthrow of our Gov-

—— on Timely Subjects

ernment. They foster strikes continuously and without end until time as the American people are thoroughly aroused—when they plan to step into control and throttle all industry—to serve their own ends.

In doing this they employ much the same methods which characterized old time advertising. They exaggerate and distort. They "knock" and they lie.

Fortunately, in advertising, we learned our lesson. Unfortunately, with this labor element, we must teach the lesson. And, when we set about to do it, we will find that, as in the case cited, truth will overcome untruth.

But manufacturers have set in motion no counteracting tendencies. They make no effort to correct those dominated by false impressions and opinions.

True, the manufacturers have their associations and their Chambers of Commerce. But, after pouring the truth into these organizations and discussing it, they allow the organizations to make no use of such truth, except to pour it back in the form of speeches or printed matter, heard or read by no one who does not know it by heart.

Why not give the truth to him who has it not? If a group of manufacturers form an organization, why not make up a mailing list of the employees represented on the various pay-rolls, and permit that organization to disseminate the truth so accumulated? Why talk your own truths to yourselves? Why not give it to the men who need it—dressed in language they can understand?

The truth will overcome untruth. You possess it. Why hide it?

Communism

COMMUNISM is defined in the dictionary as the "theory according to which private property should be abolished and all things held in common." This is a correct definition. The whole elaborate theory of communism and socialism rests upon this simple premise. It does not sound dangerous or revolutionary. Yet this phrase of fifteen words contains all the potential elements of world conflict and ruin. Think it over.

The Communist Manifesto was published in 1848. It stands today as it was written, and is the basic document in the platform of all communist and socialist organizations of the United States and Europe. It is sometimes called the Ten Commandments of communism. All the literature of communism and of socialism is built around it. The various secret organizations and political parties of the communist movement in the United States are governed by the mandate of the Communist Manifesto. The preamble and Declaration of Principle of the Socialist Party of America are predicated upon the rule of action laid down in the Manifesto.

The aims of communism are plainly stated in the Communist Manifesto. The language is straightforward and conclusive. The six fundamental aims set forth in the Manifesto are:

1—Abolition of ownership of private property—
2—Abolition of all rights of inheritance—
3—Abolition of family—
4—Abolition of marriage—
5—Abolition of religion—
6—Abolition of the distinction between town and country.

Shocking—? Yes—to say the least. And oh! if only that shock might be hard enough and felt widely enough to make just one-half our population realize the truth.

The language is plain enough. And there is no mistake about it. Unfortunately, most of us who have given little thought and no study to the subject, stop with that portion of the theory respecting private property. Few think further. And this is exactly why men fail to understand communism or socialism. We do not reason beyond the idea of community of property.

The dictionary definition mentions only one of the aims of communism. In reality, however, this one comprehends all the others. And all would realize this if a little sound analysis was applied. The doctrine of community of property extends not only to property, but to the family, to marriage, to morals, and to religion itself.

Knowing the six fundamental aims of communism, as set forth in Karl Marx's Manifesto—are you interested in learning more? Do you want the facts?

If you would know the truth regarding Communism—its advance in America—its effect upon industrial life—and want to see it in the pages of THE PAPER INDUSTRY, write us to that effect. If a sufficient number request this exposition to indicate a general interest, more will be said in an early issue.

Of all the reputations the Germans have, doing the right thing at the right time is not one of them. For the past five years they have been working, tooth and nail, for relief from the necessity of paying reparations. Refusing to fly the flag at half-mast over the German Embassy in Washington at Mr. Wilson's death will hardly engender sympathy for their cause.

Eleventh Annual Meeting of the Canadian Pulp and Paper Association

THE eleventh annual meeting of the Canadian Pulp and Paper Association was held in the Ritz-Carlton Hotel, Montreal, on January 23, 24 and 25, 1924. A large number attended the meetings, including many from the United States, and it was generally declared the most successful convention ever held by that Association. Great questions affecting the future progress of the industry in Canada came up for discussion, and in every instance the unanimity of action and enthusiasm displayed was remarkable, which led one to realize how natural it is that this big Canadian industry is making such real progress.

Notable among the accomplishments at the convention was the adoption of the report of the Committee on Technical Research, which authorized the committee to negotiate with the government to the extent of the Association's contributing annually a sum of not less than twenty thousand dollars to a much larger amount paid by the government, for the purpose of extending and developing the work of the Pulp and Paper Division of the Forest Products Laboratories, at Montreal. A sum of two thousand dollars was also appropriated for the carrying on of the work at the laboratory in the investigation of the use of rotten wood.

MEETING OF TECHNICAL SECTION

The meeting of the Technical Section opened in the vice-regal suite of the Ritz-Carlton at 10 o'clock on Wednesday, January 23rd. Chairman O. F. Bryant presided and after a few brief remarks of welcome called on Mr. George Carruthers, who, on behalf of President Kent, made some remarks concerning the future problems of the industry, chief of which was that in face of the diminishing supply of pulpwood it became necessary to learn how to use inferior grades of wood, which heretofore had not been considered practicable. He reminded his hearers of the remark once made by the late Dr. Steinmetz, of the General Electric Company, that he thought a day would come when there would be just as big industries built on sulphite liquors as are now built on the coal tar products. There is a great unexplored field ahead which must be carefully surveyed by the research men.

The secretary's address showed the Section to be in good financial shape. The following amendment to Article Three of the by-laws governing qualifications of membership by the elimination in each paragraph of the words "not engaged in selling materials or supplies" was declared adopted as the result of a mail ballot.

The report of the Committee on Education was read and presented by T. Linsey Crossley, a copy of which will be found under Committee Reports elsewhere in this issue. In the discussion following this report, Mr. Paul Piche, director of the Technical School in Three Rivers, Quebec, spoke of the classes in pulp and paper manufacturing now being conducted there. This school is under the control of the government department of lands and forests. Representatives from each of the four mills in Three Rivers are among the ten part-time day students; ten other pupils taking the course are from outside of the industry.

Mr. R. S. Kellogg, speaking for the joint executive committee on Vocational Education, reported the progress of the text books, stating that there would be a good substantial cash balance left after the completion of Volume Five, together with a good size royalty fund. Mr. R. S. Hatch, former president of T. A. P. P. I., said that the big job ahead is the widespread use of the text books. He recommended that some of the surplus money be used to generate enthusiasm in the minds of the executives of the industry for a widespread educational effort. Mr. J. N. Stephenson, editor of the text books, spoke of the necessity in Canada for having the books printed in both French and English, as several mills have refused to co-operate until equal facilities are granted to French and English students. Thanks were expressed to the Institute of Industrial Education, under the leadership of J. J. Harpell, for their carrying on of the Canadian technical course. It is reported that about 500 students are now enrolled, about fifty per cent of which regularly turn in their papers for examination and grading.

A. P. Costigane, chairman of the Committee on Apprenticeship, read a very interesting report, a copy of which is included under the heading of Committee Reports, elsewhere in this issue. Much discussion followed the reading of this report, which displayed considerable differences of opinion in the methods to pursue. Mr. W. G. McNaughton, secretary of T. A. P. P. I., gave an interesting account of the old idea of apprenticeship, and submitted the report of the Joint Committee, which was published in the January number of this magazine. After a healthy discusssion entered into by a number of those present, it was decided to recommend to the Canadian Association the Technical Section's approval in principle of some plan of apprenticeship. The presentation of other committee reports then followed.

The matter of deciding the status of student membership in the Technical Section as applied to those who have satisfactorily completed the study of the first two volumes of the Text Books was then carefully discussed and concluded in the adoption of the following report:

Status of Students

1. Any student is entitled to apply for membership in the Technical Section when he has satisfactorily completed the first two volumes of the course—i. e., mathematics, reading drawings, physics, mechanics, hydraulics, electricity and chemistry.

2. That when a student has completed the requirements as above outlined, he must send in a regular application through the regular channels.

3. That the Institute shall not ask the student to make out an application and hand to the representative at the time of his enrollment.

4. That the representatives of the Institute be allowed to hold out as an inducement to the student member by making proper application to the Technical Section when he has satisfactorily completed the requisite amount of work.

The matter of holding a summer meeting was left open and will be decided upon after a canvass of the members' wishes in the matter.

After the appointment of the nominating committee, the meeting adjourned until 2:30 o'clock in the afternoon.

Wednesday Afternoon Meeting

The meeting of Wednesday afternoon was opened by an address by Mr. George Chahoon, Jr., president of the Laurentide Company, Ltd., on "The Place of the Technical Man in the Paper Industry." This paper was one of the sensational features of the convention and is published elsewhere in this issue. The balance of the afternoon was taken up in the presentation of the following three papers: "Pulp Testing," by Mr. C. B. S. Hawkings, chief chemist Price Brothers and Company, Ltd.; "The Use of Canadian Talc in Paper Making," by Mr. William C. Lodge, Division of Pulp and Paper, Forest Products Laboratories of Canada, Limited, Montreal; "Ball and Roller Bearings as Applied to Paper Machines," by Mr. R. H. DeMott, manager Pulp and Paper Division, Canadian SKF Company, Montreal.

THURSDAY'S MEETING

Thursday's session opened at 10 o'clock in the morning, with the presentation of the following four papers: "Recent Developments in the Use of Canadian Fuels," by B. F. Haanel, Chief Division of Fuels and Fuel Testing, Mines Branch, Department of Mines, and member of the Dominion Fuel Board, Ottawa, Ontario; "Felts and the Mechanism of Water Removal," by Dr. E. A. Rees, Director of Research, F. C. Huyck and Sons; "The Effect of the Rate of Growth on the Density of Wood and Fibre Characteristics," by J. D. Hale, Division of Timber Physics, Forest Products Laboratory, Montreal; "Improved Floors for Paper Mill Chipping Room," by Charles A. Mullen, of Milton Hersey Co., Ltd., Montreal.

Officers of the Technical Section for the ensuing year were then elected as follows: Chairman, R. W. Hovey, Abitibi Power and Paper Company, Ltd., Iroquois Falls, Ontario; vice-chairman, C. Nelson Gain, Canadian Vegetable Parchment Company, St. Catherines, Ontario; councillors, A. P. Costigane, Ontario Pulp and Paper Makers' Safety Association, Toronto, Ontario; C. V. S. Hawkings, Price Brothers and Company, Ltd., Kenogami, Quebec; and H. O. Keay, Laurentide Company, Grand Mere, Quebec.

The meeting then adjourned for a joint luncheon of the Technical and Woodland Sections of Canadian Pulp and Paper Associations, which was held in the ballroom. The luncheon was significant in the number of executives of pulp and paper

companies present. The speaking centered around the address of Mr. Chahoon on "The Technical Man," which was read the day before. Sir William Price, president Price Brothers and Company, Ltd., declared that he was out and out for the technical men. "Technical men with common sense and vision are going to be the men of the future," he said. Practical men are limited by the lack of education in the possession of the technical men. He urged mutual co-operation between the technical and the practical men.

He was followed by George H. Mead, president of the Spanish River Pulp and Paper Company, Ltd., and the Mead Pulp and Paper Company, Dayton, Ohio. Mr. Mead suggested that the technical section have committees appointed for the specific purpose of consulting with executives of pulp and paper companies with a view to establishing a course of education for developing the technical men along proper lines in the first three to five years of his start in the industry. This would help him to avoid common mistakes; to get a proper idea of the financial aspect, and to learn accurately the basic principles of the industry in which he is engaged. Mr. Mead did not think that the university should be expected to do anything further for the practical training of the men. He emphasized the importance of early intensive training, instancing how beneficial it proves in the legal profession, several important companies now being under the leadership of legal men.

W. G. McNaughton, secretary of T. A. P. P. I., submitted that the term, technical man, should be more or less forgotten and that his value should be determined by the organization employing him. Ellwood Wilson, chief forester of Laurentide Company, speaking for the forester as a technical man, said that he must be able to go into the woods and be able to do the same kind of work as the woods operator. Dr. Hugh P. Baker, secretary-treasurer of the American Paper and Pulp Association, spoke with reference to the importance of the work of the Woodlands Section in the association activities.

The luncheon was followed by a joint meeting of the Technical and Woodland Sections, where the topic under discussion was the "Treatment of Decayed Wood in and outside the Mill." The discussion was opened by Dr. Bjarne Johnsen, Hammermill Paper Company, Erie, Pa., and participated in by Prof. J. H. Faull, Toronto, and Mr. John D. Rue, of the Forest Products Laboratory, Madison, Wis., and others. A paper on "Decayed Wood for Sulphite Pulp," by John D. Rue, R. N. Miller, and C. J. Humphrey, of the Forest Products Laboratory of Madison, Wis., was presented under this discussion. A report of the Committee on Wood Measurement was then presented by Chairman T. J. Murer of Riordon Company, Ltd., Hawkesbury, Ontario. A general discussion followed this report, concurring at least in one essential, that a standard unit of pulpwood measurement is absolutely necessary. The consensus of opinion favored the solid cubic foot measurement. R. S. Kellogg suggested that if this unit of measurement, as suggested, were one hundred solid cubic feet, that a common unit term be adopted. Witticisms followed in suggesting that this term be called "one pinche," named after the Quebec provincial forester, or one better by T. Linsey Crossley, that it be termed "the lost cord."

MEETING OF WOODLANDS SECTION

The meeting of the Woodlands Section was held in the Blue Room of the Ritz-Carlton at ten o'clock on the morning of the 24th, Chairman Ellwood Wilson presiding. The business of the meeting embraced the discussion on qualification for membership and the appointment of a permanent secretary, together with committee reports. A very excellent paper on the subject "What is Sustained Yield?" was presented by B. F. Avery, of the Spanish River Pulp and Paper Company, Ltd. This paper is published elsewhere in this issue. Following a general discussion on this paper, Mr. Wickerman, of the Wayagamack Pulp and Paper Company, Ltd., read an excellent paper on forestry from the standpoint of policy. "Waste in the Woods and Sinkage" was the subject of another paper read by Chairman Wilson in the absence of the author.

Officers of the Woodlands Section were then elected as follows: Chairman, Ellwood Wilson, Laurentide Company, Ltd., Grand Mere; vice-chairman, Herman Schanche, Abitibi Power and Paper Company, Ltd., Iroquois Falls; councillors, W. McE. Bowden and J. A. Black.

THURSDAY'S SMOKER

The annual informal smoker was held at nine o'clock Thursday evening in the ballroom of the Ritz-Carlton. The setting was designed for the final excavation of the "inmost inner tomb of His Exceedingly Late Majesty, King Toot-Honk-an'-Come-in, the First." A galaxy of fine dancing girls lent charm to the entertainment and "old King Tut," as he emerged from the dusty confines of his ancient tomb, took from the sanctity of his chamber numbers of gifts which he gave to distinguished members of the Papyrus Industry. The whole evening was one of great jollification and concluded with a very clever sketching act by a prominent newspaper cartoonist.

CANADIAN PULP AND PAPER ASSOCIATION MEETING

The eleventh annual meeting of the Canadian Pulp and Paper Association was held in the vice-regal suite of the Ritz-Carlton at ten o'clock on the morning of Friday, January 25th, President H. F. E. Kent, of Kinleith Paper Mills, Ltd., Toronto, presiding. Following the secretary's report, which showed the year to be a prosperous one, the president's address was read, which is as follows:

President's Address

"Speaking in a broad and somewhat general sense, I think we may congratulate ourselves that our industry, for the most part, has come through the preceding twelve months satisfactorily and that it is today in a reasonably healthy condition. This applies particularly to those branches producing news print, wrapping and fine papers. The mechanical pulp section has also enjoyed a fairly good year. Some of the other branches, notably those engaged in producing chemical pulp, kraft wrapping, book paper and boards, have less reason to be satisfied. The markets for these products are in an unsettled condition, chiefly due to European competition, whose strength continues to lie in lower production costs and the advantage afforded to them in a selling market by their depreciated exchanges. The situation is a serious one and should occasion much concern. Some of these branches of our industry are having a very difficult time, even some of first-class importance and with the most modern equipment. Over-expansion of the industry is assigned by some authorities as the underlying cause, but, since the prosperity of these companies depends very largely upon their ability to find a foreign market for their products and not upon the domestic demand, the real cause is probably to be found in their inability, under present conditions, to compete in the world's markets.

"Reference has already been made to the advantages enjoyed by European producers. It cannot be denied that lower production costs, based largely upon cheap labor and depreciated exchanges, enable them to undersell their American and Canadian competitors. Our industry, in common with other Canadian industries, is suffering from excessive taxation, which brings in its train a long line of minor ills and, in the last analysis, is responsible for our higher production costs. Abnormal transportation rates furnish another contributing cause along with high labor costs, but these latter, in turn, can be traced, together with the high cost of living in Canada, to excessive taxation, and no real improvement can be looked for until taxes begin to descend. It is to be hoped that time will bring an amelioration of these onerous conditions.

"Tariff changes made by the Dominion Government since coming into power have not helped us but, on the contrary, have opened the doors to increased imports of British papers. The tendency towards a lower tariff displayed by the present government and its immediate predecessors bodes no good to those branches of our industry dependent on the domestic market, and we should do everything possible to discourage them.

"Despite our several efforts we are still practically debarred from the Australian market on account of the exceedingly high preference tariff accorded by Australia to the British paper manufacturers. The effect of this is seen in the fact that our exports of news print to that country have declined from 39,000 tons in 1920 to 6,525 tons in 1923.

"Our Government assures us that it is still hopeful of securing a better trade agreement with Australia and that negotiations to that end are pending.

"*Exportation of Pulpwood.*—The question as to whether the time has not arrived for the Dominion of Canada to extend the regulation now applying to pulpwood cut on the crown lands of the four eastern provinces, requiring such wood to be put through at least one process of manufacture before being exported, to pulpwood of all descriptions, has received a great deal of public attention during the year. It is one of vital importance to our industry. The Government, evidently convinced that such a course was desirable, sought and obtained from Parliament at its last session, sanction to inaugurate the policy proposed. Before invoking the power thus given, however, the Government appointed a royal commission to investigate the subject and make recommendations. Unfortunately, perhaps, for the prospect of any immediate benefit from the Commission's work, the Government, by passing an interim order-in-council exempting for ten years wood

sold for export under contract, and by giving a verbal pledge to exempt wood cut from farm lands, seems to have left itself without the means to check the practice complained of, even should the Commission report in favor of so doing.

"Our Association, acting through its Executive Council, laid before the Commission a statement embracing the general views of our members, in which the desirability as well as the extreme necessity of husbanding our pulpwood resources was argued. In this statement emphasis is laid on the fact that while our raw material in the shape of pulpwood is at present freely available to our American competitors we are deprived of the American market for many of its finished products. We have argued the view that if exportation of pulpwood is to be permitted to go on as at present, a fair *quid pro quo* would be the granting of free entry to the American market for Canadian paperboards, wrapping and book papers, and we commend that suggestion to the authorities at Ottawa.

"*Industrial Research.*—In conformity with instructions given at the last annual meeting the Association was represented at the National Conference on Industrial Research, held in Ottawa under the auspices of the Canadian Manufacturers' Association in April last by the president, the chairman of our Technical Section and the secretary. The conference was attended by representatives of all Canada's leading industries and a definite impulse was given to the cause of industrial and scientific research for Canada. A program was laid before the Government and was sympathetically received.

"Our own Committee on Industrial Research has continued its efforts during the year and will come before you with a report containing some practical suggestions growing out of their deliberations and investigations.

"*The Empire Forestry Conference.*—The Association was represented at the Empire Forestry Conference, held in Canada last summer, by Mr. Ellwood Wilson, chairman of the Woodlands Section, and the secretary. The conference was attended by representatives from all parts of the British empire and the interchange of information and of opinions could not help but be of benefit to all concerned. In their tour through the different provinces, the delegates took occasion to inspect some of the larger pulp and paper plants, and were hospitably received by our members.

"*The British Empire Exhibition.*—The Executive Council authorized the expenditure of $2,500 for space in the Canadian Pavilion at the British Empire Exhibition in London next year, in which to display an exhibit representing our industry. The Council also authorized the engagement of Mr. J. N. Stephenson, editor of the Pulp and Paper Magazine, to supervise the arrangements for the exhibit and to attend the exhibition on behalf of the industry. A sufficient number of our members have agreed to sublease space and supply exhibits to insure the success of the enterprise.

"*Industrial Education.*—Marked advance has been made during the year in connection with the several plans for extending vocational education to the young men engaged in pulp and paper mills.

"The Text Book Committee has succeeded in getting Volume IV of the series of text books on paper making from the press and has the fifth and final volume well under way.

"The correspondence course, based on the text books and carried on by the Institute of Domestic Arts and Science, has made progress and now has more than 400 students enrolled.

"The Quebec Government has initiated its paper-making school at Three Rivers under what seems to be quite favorable auspices. The plans for this school were submitted, in advance to our Executive Council and were duly approved. The Council also appointed a number of representatives of the Association as an advisory board to assist the faculty of the school.

"In conclusion, I could say that while the foregoing summarizes the main activities of the Association during the year, there have been numerous minor ones which it is thought not necessary to enumerate here. The Executive Council has held four meetings. The membership has been increased by three during the year. Most of the Sections, as you will see by the reports submitted, have functioned in their customary manner, and the Association, as such, can look back upon the year's accomplishments with entire satisfaction.

"As to the future, there are many problems awaiting solution and much work to be done, the successful issue of which will be determined by the measure of co-operation and support accorded by the members to the executive entrusted with the responsibility of carrying on the Association's affairs."

The reports of the various sections were presented in printed form and accepted. The report of the Committee on Technical Research was one of the big topics under discussion. This report appears on another page of this issue. Its recommendations were concurred in and the report was adopted.

The report of the Woodlands Section was another topic which received considerable attention. It resulted in the adoption of a motion by Mr. Wilson that the Association appropriate two thousand dollars to the Canadian Forest Products Laboratory for further investigation of the use of rotten wood. Another motion was carried to the effect that membership in the Woodlands Section be now revised to allow only members of the Canadian Pulp and Paper Association to become members of the Section.

Mr. George Carruthers spoke on behalf of the committee on Vocation Education, and his talk was supplemented by remarks from R. S. Kellogg and J. H. Stephenson. The proposed amendment to By-Law Four was carried.

Mr. George Carruthers, president and general manager, Interlake Tissue Mills, Ltd., Toronto, Ontario, was then elected president of the Canadian Pulp and Paper Association by acclamation. He expressed himself as being in great accord with the forestry problems confronting the industry, and said that the members had very definite ideas as to what should constitute the policy of the Association for the ensuing year, and that he would try carefully to carry them out.

Technical Section's Apprenticeship Recommendation

On behalf of the Technical Section, President R. W. Hovey presented the following resolution:

"Whereas, it is advisable that some system be devised to insure a supply of trained operatives and prospective executives for the progress of the pulp and paper industry,

"Be it resolved, that the Technical Section recommend to the Canadian Pulp and Paper Association that it approves the principle of introducing some form of training for men who wish to undertake service in the industry as a life work, and that the council of the section place this resolution before the Canadian Pulp and Paper Association for its approval."

It was moved and carried that this resolution be placed before the incoming executive committee for their consideration. The meeting was then adjourned.

EXHIBITS

An exhibit of aerial photographs of Canadian mill sites seen through a stereoscope was displayed in the hotel corridor by the Fairchild Aerial Surveys Company of Canada, Ltd., Grand Mere, Quebec. The Spencer Lens Company exhibited their trans-lux daylight screen showing paper and pulp mill operations, which will be part of the exhibit of the Canadian pulp and paper industry at the British Empire Exhibition in London, this year. A large map of the Dominion of Canada was displayed on the mezzanine floor of the hotel, which has been prepared as a part of the same exhibit. Fifty-eight illuminated pictures of some of the largest Canadian mills were spread over the map and an alphabetical list of all mills in Canada was printed with a corresponding numbered button on the map which indicated where the mill was located.

ANNUAL LUNCHEON

The annual luncheon of the Canadian Pulp and Paper Association was held in the ballroom of the Ritz-Carlton at one o'clock of the afternoon of Friday, January 25th. Following the coffee and cigars, President Kent presented ex-president George Chahoon, Jr., with a beautiful cellaret on behalf of the members of the Association. Mr. Chahoon responded with fitting remarks emphasizing that he prized highly the friendship and esteem of the men associated with him in business.

Hon. James Lyons, Minister of Mines and Forests of Ontario, gave an interesting and enlightening address. He made a plea for the embargo, stating that if the 1,400,000 cords of pulpwood which were exported last year and for which the Dominion had received $14,000,000, had been manufactured in Canada much industrial growth would have ensued; the sales tax and the income tax would have been increased. He said that Ontario had suffered the greatest loss in its history through forest fires, or over 2,000,000 acres burned, 30 per cent of which was high class timber. As a prevention from fire, Ontario will purchase, during the coming year, 12 to 15 flying machines to daily patrol their forest area. Ontario is carrying on some reforestation work; about 25,000,000 young trees have been planted at Fort William, which are between three and five years old. The province offers to plant and look after trees in co-operation with timberland owners on the basis of 50-50 in returns. He emphasized that co-operation is needed between all the provinces of the Dominion government if some of the drastic regulations are to be put in effect. There is as much need for protecting the market, he said, as protecting the future supply of raw materials.

The next speaker was C. Howard Smith, president Howard

Smith Paper Mills, Ltd., Cornwall, Ontario, and president of the Canadian Manufacturers' Association. Mr. Smith was not so much in favor of the embargo as he was for a reciprocal release from tax burden on the part of the United States. He said that no country can ever succeed by exporting its raw materials, and that Canada should manufacture the highest percentage of them, and that the need of Canadian pulpwood by the United States could be used as a splendid leverage in the situation. Following this excellent talk, the luncheon was adjourned.

PRESIDENT'S DINNER

The annual dinner was held at the Ritz-Carlton Hotel, on the evening of Friday, January 25. The dinner was presided over by Mr. H. F. E. Kent, president, and with him at the head table were the Hon. Thomas A. Low, Minister of Trade and Commerce, the Rev. Nehemiah Boynton, D.D., New York, and Mr. George Carruthers, president-elect, the speakers of the evening, Messrs. Carroll Riordan, I. H. Weldon, J. H. A. Acer, F. J. Campbell, J. A. Bothwell, George Chahoon, Jr., P. B. Wilson, George M. McKee, past presidents of the Canadian Pulp and Paper Association; Mr. Hugh C. Baker, Frank W. Clarke, and others. During the progress of the dinner a musical program, ranging from the works of the old masters to the products of the modern song writers, and including Scottish ballads and negro melodies, was presented with most pleasing effect by a talented company of instrumentalists and vocalists. About four hundred guests attended.

The more formal part of the proceedings began with the introduction by the president, Mr. Kent, of toasts to His Majesty the King and to the President of the United States, which were honored with equal enthusiasm and sincerity by all present.

The first speaker was Hon. Thomas A. Low, Minister of Trade and Commerce, who gave an excellent account of the growth of the paper industry in the Dominion and concluded his address with the following:

"The United States market absorbs annually some four-fifths of all our pulp and paper shipments, the remaining fifth going largely to United Kingdom and scattered markets. In addition to this fact, the significance of our production in the light of the United States needs is evident from the fact that two-thirds of the newsprint paper consumed in the United States is either of Canadian manufacture or is made from wood or wood pulp imported from Canada.

"Canada is a young country of small population and vast resources. In the development of these she must guarantee that it is development and not exploitation, conservation and not absolute depletion, that takes place. In nothing is there greater danger of a policy, intent on rapid development, being ultimately short-sighted, and devastating than in the field of timber resources. Co-operation between Canada and the United States will preserve reserves for all."

The next speaker was the Rev. Dr. Boynton, D.D., known as the spiritual adviser of the American Paper and Pulp Association, who gave a most inspiring address. The appreciation of the presence and oratory of both of these speakers was attested to by the quiet attention of their listeners. The evening concluded with appropriate remarks from the newly elected president, George Carruthers, and the singing of the national anthem.

TECHNICAL SECTION PARTIAL REGISTRATION

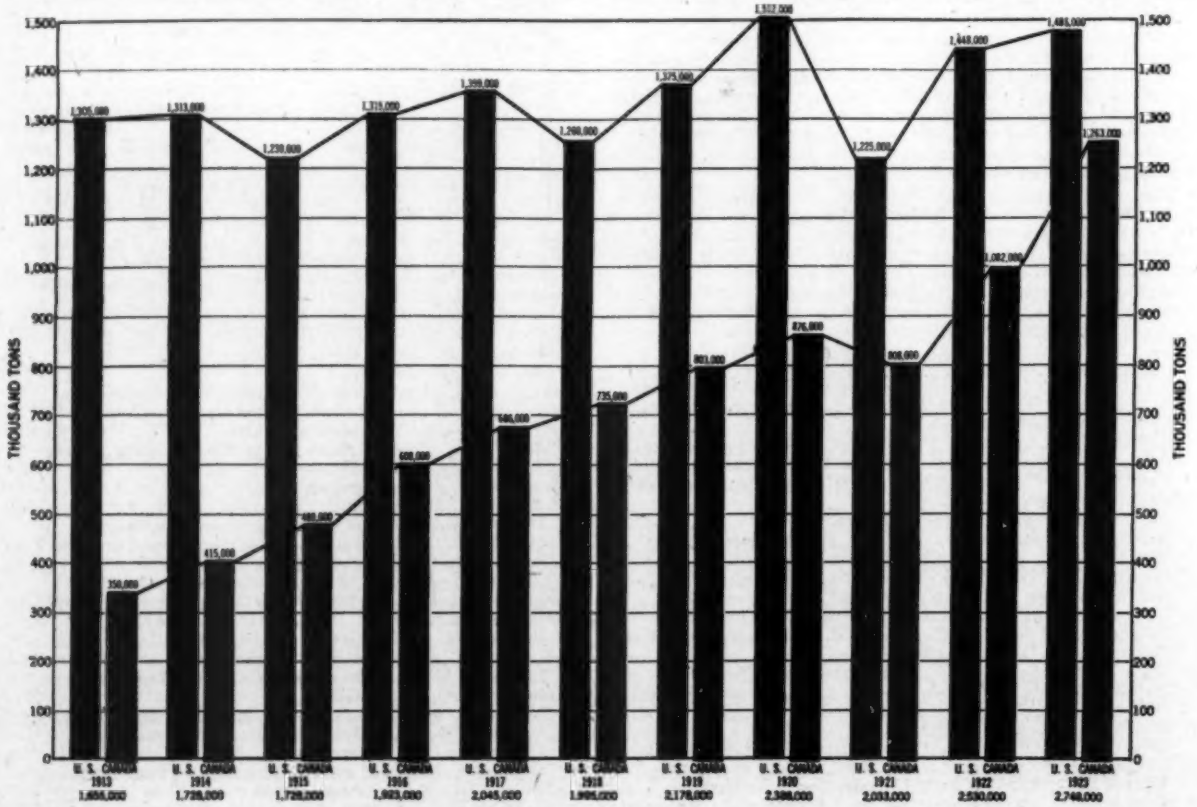
Alexander, Colin, Forest Products Laboratories, Montreal.
Arbo, C. G., Lachine, Que.
Arnold, C. C., Canadian Paperboard Company, Montreal.
Atkinson, Stuart, Henry Atkinson, Ltd., Etchemin, Que.
Baker, Hugh P., American Paper & Pulp Assn., New York.
Ball, John, Bathurst, N. B.
Barnes, William H., McGill University.
Bates, H. E., Laurentide Co., Ltd., Grand Mere, Que.
Bay, Dr. Chr., Riordon Co., Hawkesbury, Ont.
Beady, H. E., Nashwaak P. & P. Co., St. John.
Bearce, George D., Newsprint Service Bureau, N. Y.
Beauchemin, J. A., Donnacona Paper Co., Donnacona.
Beique, Alex., Newfoundland P. & P. Co., Shawinigan Falls.
Beveridge, J. B., Richmond, Va.
Blair, R. J., Forest Products Laboratories, Montreal.
Bowden, W. McE., Laurentide Co., Ltd., Grand Mere, Que.
Boyce, Charles, U. S. Forest Service, Washington, D. C.
Bradshaw, E. A., Toronto.
Bryan, R. H., Brompton Pulp & Paper Co., Ltd., E. Angus.
Bryant, O. F., Laurentide Co., Ltd., Grand Mere, Que.
Burns, S. L., Riordon Pulp Corporation, Hawkesbury.
Cameron, E. P., Forest Products Laboratories, Montreal.
Campbell, J. H., THE PAPER INDUSTRY, Chicago.
Campbell, Roy, Riordon Co., Montreal.
Campbell, W. B., Provincial Paper Mills, Ltd., Georgetown.
Carter, Wm., Can. Ingersoll-Rand Co.
Champory, John, Quebec.
Charters, G. W., Laurentide Co., Ltd., Grand Mere, Que.
Christopher, W. F., Belgo-Can., Shawinigan Falls, Que.
Clarke, F. W., Gulf Pulp & Paper Co., Quebec.
Claxton, G., Belgo Paper Co., Shawinigan Falls.
Conner, E. A., Day & Zimmerman, Inc., Philadelphia.
Copping, A. B., Pyrites, N. Y.
J. Corcoran, Montreal.
Cornell, John, The Paper Mill, New York.
Costigane, A. P., Ont. Pulp & Paper Makers' Safety Ass'n.
Couture, A. P., Montreal.
Cowles, Edward B., American-English Co., Philadelphia.
Crabtree, D., Howard Smith Paper Mills, Beauharnois.
Crabtree, E. S., Bathurst Co., Ltd.
Crocker, D. A., Eastern Mfg. Co., Bangor, Maine.
Cronkhite, W. W., General Electric Co., Montreal.
Crossley, T. L., 28 Lonsdale Road, Toronto.
Davidson, G. A., Howard Smith Paper Mills, Toronto.
DeCew, J. A., Process Engineers, New York.
Delaney, O. J., T. McAvity & Sons, St. John, N. B.
DeMott, R. H., Canadian SKF Co., Montreal.
Dixon, Harry, Hudson Trading Co., New York.
Dodd, William, Riordon Pulp Co., Temiskaming.
Doran, H. T., Dominion Flow Meter Co., Toronto.
Dowd, A. Scott, THE PAPER INDUSTRY, Chicago.
Eaton, C. E., Watertown, N. Y.
Falls, C. D., Canadian SKF Co., Montreal.
Falkenberg, G. D., Price Bros., Quebec.
Finlay, J. M., Ritchie & Ramsay, Ltd., Toronto.
Flanders, H. F., Dilts Machine Works, Fulton, N. Y.
Fogan, James.
Gain, C. N., Can. Vegetable Parchment Co., Merritton.
Gordon, G. H., Penman's, Ltd., St. Hyacinthe, Que.
Gottesman, P., Hudson Trading Co., New York, N. Y.
Gough, J. B., Laurentide Co., Ltd., Grand Mere.
Graham, George P., Forest Products Laboratories, Montreal.
Griffin, F., Oliver Continuous Filter Co., New York.
Gurman, S., Riordon Co., Hawkesbury.
Hadskin, G. H., Lindsay Wire Weaving Co., Cleveland, Ohio.
Hale, Can. Ingersoll Rand Co., Montreal.
Halligan, C. W., Newsprint Service Bureau, New York.
Hallberg, G., Cleveland.
Hanly, Don, P. T. Coolidge, Bangor, Maine.
Hanson, George F., Dunlop Tire & Rubber Goods, Co., N. Y.
Harris, A. W., Glens Falls, N. Y.
Hatch, R. S., T. A. P. P. I., Nutley, N. J.
Hawkings, C. S. V., Price Bros., Kenogami.
Hazen, C. R., Montreal.
Henry, L. S., DeGrasse Paper Co., Pyrites, N. Y.
Higgerty, H. S., Student.
Hinds, H., Carthage Machine Co., Carthage, N. Y.
Hosmer, Prof. Ralph, Cornell University, Ithaca, N. Y.
Hughes, J. F., Warwick Woollen Mills, Warwick, Que.
Jacques, A. G., Brompton P. & P. Co., East Angus, Que.
Jenssen, J. D., G. D. Jenssen Co., New York.
Johannsen, H. S., Lidgerwood Logging Machin., Montreal.
Johnsen, B., Hammermill Paper Co., Erie, Pa.
Johnson, R. E., Cleveland Pneumatic Tool Co., Montreal.
Jones, C. H. L., Spanish River P. & P. Mills, Soo, Ont.
Judge, E. H., Price Bros., Quebec.
Kay, S. E., Pyrites, N. Y.
Keay, H. O., Laurentide Co., Ltd., Grand Mere, Que.
Kellogg, R. S., Newsprint Service Bureau, New York.
Kendall, L. E., Iroquois Falls, Ont.
Kent, C. H., Paper Makers Chem. Co., Holyoke, Mass.
Kirby, H. S., McGill University.
Lachapelle, J. D., Montreal.
Lee, H. N., Hammermill Paper Mills, Erie, Pa.
Lindbom, E., Bay Sulphite Co., Chandler, Que.
Lippsitt, H., International Paper Co., New York.
Lodge, Wm. C., Forest Products Laboratories, Montreal.
MacDonald, J., McGill.
MacLaurin, J. E., Riordon Pulp Cor'n., Hawkesbury, Ont.
MacNaughton, W. G., T. A. P. P. I., New York.
Maguire, M. J., Empire Size and Chem. Corp., Albany.
Malcolm, C. G., Price Bros., Kenogami.
Mansfield, E. K., Robert Gain Co., New London, Conn.
Matheson, G. L., McGill.
McAfee, R. E., Babcock Wilcox & Goldin McCulloch, Mon.
McAvity, G. C., St. John, N. B.
McKee, Geo. M., Ogdensburg, N. Y.
McKinnon, A. H., Montreal, St. Regis Paper Co.
McLean, A. E., Bathurst, N. B.
McLeod, D. L., Abitibi P. & P. Co., Iroquois Falls.
Medbury, Chas. F., Canadian Westinghouse Co., Montreal.

Meerbergen, G., Nfld. P. & P. Co., Shawinigan Falls, Que.
Mess, James, Dom. Flow Meter Co., Toronto.
Millidge, B. de B., Howard Smith Paper Mills, Cornwall.
Mitchell, Geo. G., Ayers, Ltd., Lachute, Que.
Moore, L. C., St. John, N. B.
Morris, C. A., Canadian Paperboard Co., Frankford.
Mounberg, R., Montreal.
Moyle, C. A., Riordon Co., Hawkesbury.
Mullen, T. J., Belgo-Can., Shawinigan Falls.
Olzendam, R., Span. R. P. & P. Mills, Soo, Ont.
Owen, H. A., Canadian General Electric Co., Toronto.
Panzl, Paul, Belgo Paper Co., Shawinigan Falls, Que.
Pauline, G. W., Ritchie & Ramsay Ltd., Toronto.
Patterson, J. E., Abitibi P. & P. Co., Iroquois Falls.
Pease, O. C., Canada Manufacturers' Association, Toronto.
Post, L. D., The Paper Mill, New York, N. Y.
Powell, W. B., Appleford Counter Check Book Co., Hamilton.
Read, D. E., Brompton P. & P. Co., East Angus.
Rees, E. A., F. C. Huyck & Sons, Albany, N. Y.
Remsen, T. R., Union Bag & Paper Co., Hudson Falls, N. Y.
Rider, F. E., Donnacona Paper Co., Quebec.
Richant, A. M., Montreal.
Robb, J. D., Dominion Eng. Co., Montreal.
Robertson, Wm. J., Heller & Meiz Co., New York.
Rooney, F. J., Upson Board Co., Lockport, N. Y.
Ross, A. D., Can. General Electric Co., Toronto.
Rowan, E., Cleveland Stone Co., Cleveland, Ohio.
Rowlett, R. S., Cameron Machine Co., Brooklyn, N. Y.
Rue, J. D., U. S. Forest Products Laboratories, Madison.
Russell, A. N., Dominion Eng. Works, Montreal.
Safford, Theo., Raquette River Paper Co., Potsdam, N. Y.
Shipman, L. H., Spanish R. P. & P. Mills, Soo.
Shotwell, J. S., McGill.
Sigel, Arthur, M. Gottesman & Co., New York.
Sisson, F. T. E., Potsdam, N. Y.
Smith, W. H., Abitibi, Montreal.
Spencer, G. H., SKF Industries, Inc., New York.
Steeler, P., Nashwaak Pulp & Paper Co., St. John, N. B.
Stephenson, J. N., Gardenvale.
Sterling, E. A., Lincoln Mills, Ltd., Merritton.
Stevenson, T. J., Riordon Company, Montreal.
Stockwell, H. P., Montreal, McGill.
Taylor, J. A., George Christie, Canada, Ltd., Montreal.
Thomlinson, G. H., Howard Smith Paper Mills, Montreal.
Thorne, C. B., Riordon Co., Hawkesbury.
Vickery, F. W., Vickerys, Ltd., London, England.
Wainwright, N. E., Provincial Paper Mills, Toronto.
Wallace, J. R., Laurentide Co., Grand Mere, Que.
Wang, S., Riordon Co., Hawkesbury, Ont.
Wardle, F. W., Laurentide Co., Grand Mere.
Ware, G. A., Newsprint Serv. Bureau, New York.
Warren, H. S., Laurentide Co., Grande Mere, Que.
Williamson, F. J., Montreal.
Wells, J. R., Pulp & Paper Accessories.
Welsford, H. G., Dominion Eng. Works, Montreal.
Wharton, W. H., Can. Allis Chalmers, Toronto.
Whitten, C., Can. Paperboard Co., 2 Seigneurs St., Montreal.
Wilson, E. P., Brompton P. & P. Co., East Angus, Que.
Worrell, P., Mead Co., Dayton, Ohio.
Wright, Ed, Chateaugay, N. Y.

Canadian Superintendents' Meeting

The Canadian section of the American Pulp and Paper Mill Superintendents' Association held a meeting at the Ritz-Carlton hotel on Friday afternoon, January 25th, presided over by Mr. D. Crabtree of the Howard Smith Paper Mills, Ltd., Beauharnois, Quebec. A general discussion was held relative to the best methods of making the Canadian section of the Superintendents' Association more active. Alexander Beique, secretary-treasurer of the Division suggested that smaller sections meet in places like Three Rivers, where there are several mills. This was heartily endorsed and a resolution was passed suggesting that the national officers of the Association arrange for a meeting of all the Canadian superintendents in Three Rivers during June or July of this year. An interesting paper on "The Benefits to be Derived from an Active Division of the Superintendents' Association" was then read by Fred J. Rooney, general superintendent of the Upson Company, Lockport, N. Y. This was followed by a paper on "Consistency in the Art of Paper Making" by F. W. Bickery, of Vickery's, Ltd., London, Eng.

A description of the new 230-inch Fourdrinier news machine recently started at the Belgo-Canadian Paper Company, Shawinigan Falls, Quebec, was given by A. N. Russell of the



Newsprint Production 1913-1923, United States and Canada

Dominion Engineering Works, Montreal, Canada, builders of the machine.

Benjamin T. Larrabee, secretary-treasurer of the Northeastern Division of the Superintendents, concluded the meeting with an interesting talk on "Inter-departmental Co-operation in the Manufacture of Sulphite Pulp."

Newsprint Service Bureau Meeting

The meeting of the Newsprint Service Bureau was held in the Vice-Regal Suite of the Ritz-Carlton on Friday afternoon, January 25th, J. A. Bothwell presiding. The principal order of business was the reading of the statement by Secretary Royal S. Kellogg, which is published elsewhere in this issue.

The scope of the Bureau's service was increased by the amendment of the basis of organization which took the form of changing the name of the Newsprint Service Bureau of the U. S. and Canada to the Newsprint Service Bureau of North America. Some changes were made affecting the dues in the Bureau, and the following officers were then re-elected: George M. McKee, president; Louis Bloch, Sr., vice-president; R. S. Kellogg, secretary-treasurer; Executive committee, Percy B. Wilson, W. E. Haskell and J. L. Apedaile.

Newsprint Paper in 1923*

Production of 2,824,000 Tons in North America Sets a New Record

THE production of newsprint paper in North America hung up a new record in 1923, the total for the United States and Canada surpassing by 218,000 tons or nearly 9 per cent the previous high mark of 2,530,000 tons in 1922.

The United States mills produced 1,485,000 tons of newsprint or 37,000 tons more than in 1922 and also more than any previous year except 1920 when the total was 1,512,000 tons. In 1920, however, the output of the regular newsprint mills in the United States was supplemented by perhaps 80,000 tons from the so-called marginal mills, which have not contributed so heavily to the newsprint supply since that time of abnormally high prices.

The rapid development of newsprint manufacture in Canada is strikingly shown by the fact that the output last year was 1,263,000 tons or 181,000 tons more than in 1922 and 455,000 tons or 56 per cent more than in 1921.

In addition to these totals for the United States and Canada, 64,000 tons of newsprint was produced in Newfoundland and 12,000 tons in the one mill in Mexico which makes newsprint, thus giving a produciton of 2,824,000 tons for the North American Continent or two-thirds of all the newsprint paper produced in the world.

In addition to this record-breaking production, with over 80 per cent of Canada's newsprint marketed in the United States, some 200,000 tons of Scandinavian, German and Finnish newsprint paper was sent to the publishers in Uncle Sam's domain in 1923, compared with 133,000 tons in 1922 and 135,000 tons in 1921.

As the production figures suggest, the consumption of newsprint paper in the United States reached a new high record in 1923. In round numbers it was 15 per cent more than in 1922 and 28 per cent more than in 1920.

Adding imports to domestic production and deducting the small amount of exports, there was 50 lbs. per capita of newsprint paper available for consumption in the United States in 1923 compared with 15 lbs. in 1900. This increase of 230 per cent in per capita consumption in 23 years explains why the United States uses more newsprint paper than all the other countries of the world combined.

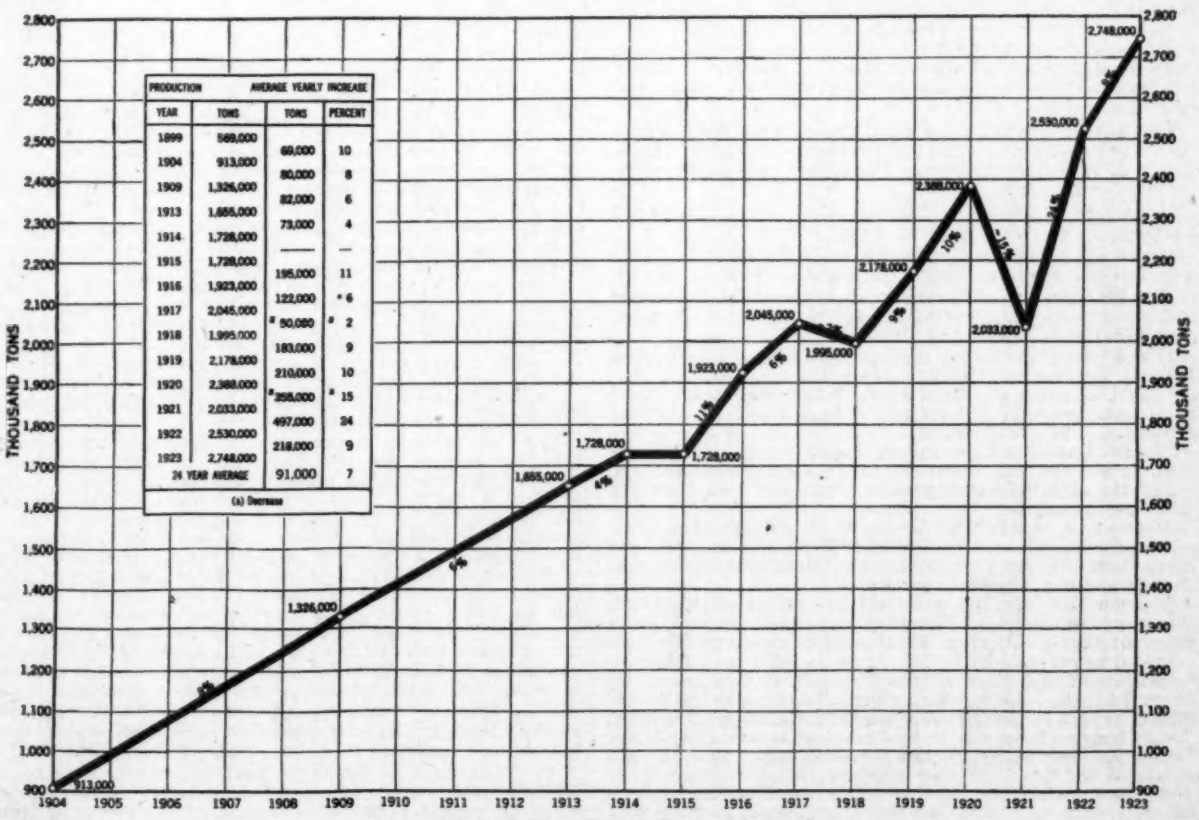
Advertising as usual was an important factor in determining the quantity of newsprint used in 1923, but influential also were the large sizes of the daily and Sunday issues and the growth in circulation. There are some 60 newspapers in the United States, each having a circulation in excess of 100,000 copies. During 1923 these dailies averaged 27 pages and the Sunday issues 101 pages—sizes never before attained.

There are more than 22,000 newspapers in the United States and Canada of which some 18,000 are monthlies and country weeklies while the circulation of the 2,000-odd English language dailies is approximately 31,000,000 for the weekday issues and 21,000,000 for the Sunday issues. A well-

*Abstract of report made by R. S. Kellogg, secretary, at the annual meeting of the News Print Service Bureau in Montreal, January 25, 1924.

PRODUCTION		AVERAGE YEARLY INCREASE	
YEAR	TONS	TONS	PERCENT
1899	569,000		
1904	913,000	69,000	10
1909	1,326,000	80,000	8
1913	1,655,000	82,000	6
1914	1,728,000	73,000	4
1915	1,728,000	——	—
1916	1,923,000	195,000	11
1917	2,045,000	122,000	*6
1918	1,995,000	*50,000	*2
1919	2,178,000	183,000	9
1920	2,388,000	210,000	10
1921	2,033,000	*355,000	*15
1922	2,530,000	497,000	24
1923	2,748,000	218,000	9
24 YEAR AVERAGE		91,000	7

(a) Decrease



Newsprint Production, United States and Canada

known newspaper has increased in circulation from 93,000 copies to 584,000 copies of its daily issues since 1903 and from 196,000 copies to 932,000 copies for the Sunday issues in the past 20 years, and this is by no means an isolated example of newspaper growth. There is now a copy of a daily paper published for every family in the United States and Canada. The daily newspaper habit is well-nigh universal north of the Rio Grande.

The total volume of newspaper advertising in the leading cities of the United States showed an increase in 1923 over 1922 of 7 per cent and of 2 per cent over the 1920 record figure. The newspapers fared even better than the magazines in the advertising field, since the volume of advertising in the National periodicals was 19 per cent more in 1923 than in 1922, but still 21 per cent behind the 1920 total.

The large volume of advertising, both periodical and newspaper, planned for and to be expected during 1924 is a matter of common knowledge. It looks as if the time were not far distant when the total yearly expenditure for advertising by means of the printed page in North America would be one billion dollars.

Paper manufacturing in North America is a billion and a half dollar industry with the production of newsprint making up a very respectable proportion of the total investment and further notable developments under way. There were 10 new machines with a total daily capacity of 670 tons which came into production in 1923, and four more of 385 tons capacity are scheduled for this month. The North American newsprint mills now have a rated capacity of 10,000 tons daily with further substantial additions under way for the latter part of the year and for 1925, so that there should be no need for any newspaper publisher to go abroad for his supply of white paper.

Committee Reports

TECHNICAL SECTION

Steady progress has been made by the Technical Section during the year that has just passed. The work done by the various committees has been very satisfactory and much good has been accomplished. The officers and members have devoted a great deal of time to the interests of the Section and their efforts have brought about real advancement along many lines.

Meetings

Two meetings of the Section have been held during the year. The annual meeting took place in Montreal, January 24th and 25th, and the summer meeting was held in and about Montreal June 21st and 22nd.

Very interesting and instructive papers were presented at the annual meeting, and the members expressed great appreciation of the entire program. The papers read at the meeting were as follows:

"Functions of Press Felts," by Dr. E. A. Rees, Director of Research, F. C. Huyck & Sons, Albany, N. Y.

"Stock Saving with and without Save-Alls," by J. E. Trimbey, Trimbey Machine Works, Glens Falls, N. Y.

"The Manufacture of Ink and the Relation of Ink Properties to the Printing of Paper of All Grades," by Mr. B. G. Ransom, Ault & Wiborg Company of Canada.

"The Properties of Wood in Paper-Making," by Dr. Bjarne Johnsen, Hammermill Paper Co., Erie, Pa.

"The Utilization of Steam in a Modern Newsprint Mill," by Messrs. Surrey W. Slater and J. E. Warner, St. Maurice Paper Co., Ltd., Three Rivers, P. Q.

"Recent Experiments in Pulp Testing," by Mr. E. P. Cameron, Forest Products Laboratories of Canada, Montreal.

Reports of satisfactory progress were received from the following committees:

Educational Committee, Abstracts and Publication Committee, Committee on Chemical and Physical Standards, the Joint Committee on Text Books, the Committee on Apprenticeship and the Committee on Drying.

The summer meeting was held in and about Montreal. The members assembled Thursday morning, June 21st, at 10 a. m. at the Ritz-Carlton Hotel, where motor busses were provided to carry them to Ste. Anne de Bellevue. After an inspection of the plant of the Educational and Industrial Press, Ltd., the members were given a luncheon at the Senneville Country Club as guests of the Pulp and Paper Magazine. After lunch an hour was devoted to a business meeting of the Section and to a paper on "The Briner System," by J. O. Ross of the J. O. Ross Engineering Corporation of New York. From here the members were taken by launch to Beauharnois, where a very interesting afternoon was spent in inspecting the plant of the Howard Smith Paper Mills, Ltd. The Section then proceeded by launch to Lachine, where motor busses were provided for the return to Montreal. A dinner at the Ritz-Carlton Hotel completed an enjoyable and instructive day. The following morning was spent in a visit to the Dominion Engineering Works, Ltd. This was a particularly interesting visit, as the members were afforded the opportunity of seeing paper machines in the course of construction.

Standing Committees

The various committees of the Section have been particularly active this year. Each member has done his part, and some of the work has entailed a large amount of effort and a considerable sacrifice of time on the part of the individual members and particularly on that of the chairmen. The work that has been accomplished speaks eloquently of the spirit of the Technical Section.

The Committee on Abstracts and Publications has directed the publication of abstracts of the important current literature on pulp and paper as well as reviews of the more important books which have been produced during the year. Co-operation has been continued with the Technical Association of the Pulp and Paper Industry and reviews and abstracts have appeared simultaneously in the Pulp and Paper Magazine and the Paper Trade Journal. This work is being conducted without cost to the Association partly because of the generous co-operation of the publications mentioned and largely on account of the very favorable rate of remuneration which has been accepted by the abstracting staff. Shortly after the last annual meeting the committee issued the Year Book of the Section, giving a resumé of the business meeting and reprinting the principal addresses given at the last previous annual meeting.

The Committee on Chemical and Physical Standards has continued its work of the development of a standard method of testing pulp. A bulletin entitled "The Testing of Pulp for Strength" was published for the committee during the year by the Committee on Publications and copies were sent to the members of the Technical Section. Several mills have co-operated in carrying on this work. The major portion of the work has fallen upon the chairman of the committee, and his enthusiasm and devotion to the investigation are appreciated by the Technical Section.

The Committee on Apprenticeship has been very active during the year. Early in its deliberations it was decided that if a system of training was to be introduced in Canada it would be advisable to seek the co-operation of Technical Association of the Pulp and Paper Industry so that, if possible, a uniform system of training might be inaugurated which would apply to all mills in Canada and the United States. At the same time it was deemed advisable to secure the co-operation of the American Superintendents' Association, since, if a system of training was introduced, the work of training apprentices would rest largely on the shoulders of superintendents. With this in view, communication was established with the two bodies mentioned and a joint meeting of representatives of the Technical Section, the American Superintendents' Association and the Technical Association of the Pulp and Paper Industry was held in Buffalo on September 14, 1923. The result of that meeting was the appointment of a joint international committee on education. Since then considerable missionary work has been done in sizing up the situation and getting the viewpoint of executives and practical men in the industry. However, a great mass of detailed information will require to be collected and studied by the committee before a definite scheme can be submitted to the Technical Section for its approval.

The Committee on Measurement of Pulpwood was formed this year to look into the possibilities of introducing more accurate and rational methods of measuring pulpwood. From the first it was felt that this problem was one which should not be attacked by the Technical Section alone, and immediate steps were taken to obtain the co-operation of the Woodlands Section. As a result a joint committee was formed which has been carrying on an active investigation of this problem. The work of the committee has consisted in obtaining as much reliable information as possible to assist those who were responsible for its preparation. The text is measurement both in the woods and into the mill and at the same time to make available such useful data on the relation of cords, feet board measure, cubic foot, etc., as can be secured. There is an immense amount of work connected with such an investigation and some time must necessarily elapse before the committee can make definite recommendations.

The Committee on Education has kept in very close touch with the progress of educational work in the industry, especially in regard to the development of the correspondence course as carried out by the Institute of Industrial and Do-

mestic Arts at Gardenvale, Que. At the present time this institution has a total enrollment of about 475 students. There are now five institutions carrying on work by means of the Text Books of the Joint Committee on Education.

(1) University of Wisconsin at Madison, which has classes and also carries on correspondence work. There are about 40 students in the classes and 56 taking up correspondence work.

(2) University of Maine at Orono, which gives a full four-year course and has about 30 students enrolled.

(3) University of Syracuse at Syracuse, N. Y., which gives a four-year course in Pulp and Paper Technology leading to a degree of Bachelor of Science. There are about 40 students specializing in this course.

(4) The Institution of Industrial and Domestic Arts, Gardenvale, Que.

(5) The School of Pulp and Paper Making, Three Rivers, Que.

Members of this committee have assisted in the organization of the school at Three Rivers and have given courses of lectures in Pulp and Paper Technology at Toronto and McGill Universities. From time to time the committee has brought the attention of librarians to the text books with the result that the books are now available in many of the libraries of Canada.

The Committee on Drying has continued its work upon a uniform code for paper drying tests. This committee has co-operated with a similar committee of the Technical Association of the Pulp and Paper Industry. The code presented at the last annual meeting has been thoroughly studied as to its applicability and usefulness as an indication of the economy of paper drying with the result that the code is to be presented to the Technical Section for adoption as a standard at the present annual meeting.

Text Books

Volume 4 of The Manufacture of Pulp and Paper has just made its appearance and is a credit to the Association and to those who were responsible for its preparation. The text is thoroughly up-to-date and is on a par with Volume 3, which is familiar to the members of the Association. It is expected that Volume 5 will be ready for distribution before the end of the year.

The Joint Committee on Text Books are to be highly commended upon the excellent work that they are doing. Few indeed realize the enormous amount of work and the sacrifice of time that the members of this committee are making in order that the text books shall meet with the approval of the Association. The Association is and should be appreciative of the efforts of this committee.

Research

The Committee on Research has continued its study of the possibility of stimulating the research activities of the industry.

At the last annual meeting a plan for co-operative research was presented to the Association. For various reasons, which need not be mentioned here, it was decided by the Association that the time for co-operative research had not arrived and the committee was asked to give further consideration to the subject. Since co-operative research implies co-operation among all the mills of the Association, the committee felt that if any mills objected to the plan it would be unwise to attempt to develop it. The committee assured itself that there was considerable opposition to the plan and it was decided that the scheme for co-operative research should be abandoned for the present at least.

The committee then turned its attention to the consideration of the possibility of aiding the Forest Products Laboratories of Canada in carrying out pulp and paper investigations. A very complete plan whereby the Association can participate in the activities of the Forest Products Laboratories of Canada was drawn up and a report covering this will probably be presented by the committee to the Association.

Membership

There has been an increase in membership during the year as is shown below:

	Jan. 1923	Jan. 1924
Full members	110	124
Associate members	15	13
Junior members	33	43
Student members	15	12
Total	173	192

This growth, while not large, indicates that the Technical Section is in a healthy condition. No very large increase in membership can be expected, since the number of technical men in the industry in Canada is not large and the present membership in the Section represents a considerable proportion of all the technical men in the industry. So long as there is a small and steady growth in membership each year there need be very little anxiety on this score.

All of which is respectfully submitted.

O. F. BRYANT, Chairman.

WOODLANDS SECTION

The chairman of this Section has, during the past year, acted as secretary of the Section, but owing to press of other work has not been able to do all that a secretary should do. Experience has shown how much more valuable to the industry the Woodlands Section could be were it managed by a man who could give his whole time to the work. Quite a number of questions have been answered for various members, and through a co-operative agreement with the Woodlands Section of the American Paper and Pulp Association any bulletins of general interest issued by them have been sent to our members. The amount of money required for salary and expenses of a permanent secretary is estimated at $10,000, and it is strongly recommended that this sum of money be voted for the coming year. All of those companies which are operating in the woods spent almost as much money on their logging operations as they do in their mills, and any suggestions or new methods which can be worked out for more effective logging would certainly pay in large savings over the present costs. The engaging of a permanent secretary has already been approved by the executive committee, and it is hoped that you will at this meeting vote the necessary funds for this purpose.

Your committee appointed to standardize logging costs has held a very interesting meeting and considerable correspondence has been carried on with the News Print Service Bureau in New York, and it is felt that some progress has been made and interest aroused.

The most important work done during the past year has been the intensive study of rots in wood caused by fungi. No funds were voted for this work but through the courtesy of the Laurentide Company, Ltd., and Price Brothers & Company, Ltd., a car load of wood attached by the most prevalent fungi and carefully identified, was sent to the United States Forest Products Laboratory at Madison, Wisconsin. Here the identification of the fungi was checked, the amount of rot in each stick of wood carefully determined and 100-lb. cooks were made by the ordinary sulphite process to determine the suitability of this wood for pulp. This work was financed by the United States Government, and later through aid from the News Print Service Bureau. A detailed report will be presented at the meeting of the Woodlands Section, but it may be said for your information that almost all the rots studied show that just as much yield can be obtained from infected wood as from sound wood, and that the largest losses in cooking this wood amount to 28 per cent. For the most prevalent rots in both spruce and balsam the yield was equal to that of sound wood. The resultant pulps were a trifle off color, but perfectly suitable both as regards strength and other qualities for the manufacture of news print. The only disadvantage was that it did not beat quite so well.

Further studies are to be carried out by the Forest Products Laboratory and will be reported on later. Sinkage tests will also be made to determine if possible how much of this wood can be expected to reach the mill by water. The tests so far made show that no spruce or balsam containing heart rot should be left in the woods, except where the rot is in the most advanced stages, and that all such wood should be utilized chemically and not for the manufacture of ground wood. There remains considerable work to be done along these lines and it is suggested that $2,000 be voted to the United States Forest Products Laboratory to continue the work. With the rapid depletion of our supply of standing timber no wood which can possibly be used should be left in the woods. Low stumps, utilization of small tops and all decayed wood which will reach the mill will add years to the length of time our supplies will last. Leaving usable wood to rot in the woods is as criminal as throwing coined money into the ocean.

The past season has, as you all know, been a most difficult and disastrous season owing to extensive forest fires. There can be no question but that more efficient methods must be taken to prevent a recurrence of the losses of the past season. The forests, on which our industry is absolutely dependent, cannot stand the drain very much longer. A few figures as to areas burned may be of interest: The Government official figures show 27 per cent of the area in the Lac St. John region

burned and denuded, and the explorers who have passed the last few years on the North Shore of the St. Lawrence report 60 per cent of the area burnt over. One seventh of the area of the St. Maurice basin has been burnt over in the last 15 years. While much of the timber can be salvaged there will be no following crop for seventy-five years. The aerial survey of Northern Ontario shows hardly enough timber to pay for its cutting.

A start has been made by the St. Maurice Forest Protective Association which has purchased $76,000 worth of lookout towers and material for telephone lines. The experience of the past eleven years in fire prevention has brought out the following facts very strongly: first, that fire fighting in the woods, as in cities, is a special business and requires specially trained and experienced men; that it cannot be safely left to operating departments who have other work and other interests. Also, the employment of men for only half the year makes it difficult to get the proper type of man for a ranger. Inexperienced men are almost as useless in fire fighting as it is safe to say that one good man with experience is worth ten ordinary men in extinguishing a forest fire. There has been a strong disposition on the part of the Government of Quebec to take the matter of fire prevention into its own hands. The industry has not felt that this would be for the best interests of the Province and strong representations have been made to the Government to leave fire prevention in the hands of organized associations. The latest advice from the Government is that this request will be acceded to but that inspectors will be appointed by the Government who will supervise the work of the Association and of companies doing their own fire prevention work, and should this not be satisfactory to the Government or should fire not be fought to the satisfaction the work will be taken over by the Government inspectors in that district. It is necessary that some steps should be taken to regulate the amount of money paid to men for fire fighting. They should be forced to fight when called on at a very low rate of wages as it is undoubtedly true that where wages are high fires have been set to obtain work and have also been kept burning so that the men might have continued employment. The requirement that everyone who went into the forest during the danger season should have a permit, worked fairly well during the past season, but should be more strictly enforced and should be applied to privately owned lands in the neighborhood of the forest.

The Ranger School established by the Government at Berthierville under Forest Engineer Henri Roy commenced operations in September and nineteen students took the first term of work. A very satisfactory class of men attended the school, twelve of these had previous woods experience and on completing their course one went to work for ———— Company, and the rest with the Provincial Government. The term of study covers two years; eight months in school, divided into four periods, and sixteen months in the field. At the school the ratio of class work to work in the woods is 5 to 3. The total cost is $400, divided into four payments of $100 each. Board is supplied at the school for $1.00 per day. It is felt that the industries should encourage their cullers, inspectors and woods foremen to attend this school and their expenses should be paid.

The Technical Association appointed a committee on wood measurements, and much valuable information has been obtained on this subject and undoubtedly the report will be published for distribution to our members. The present methods of measuring wood, both in the woods and at the mill, are out of date, extremely inaccurate, and make it very difficult to check up the actual amounts of raw material being used. This matter should be further studied and a cubic measure of volume of solid wood adopted.

ELLWOOD WILSON, Chairman.

EDUCATION

The trouble with a house built on sand is not architectural but fundamental.

A business that is entirely economic may be a thing of beauty and function well in fine weather, but in times of strain the ethical side of industry becomes a matter of supreme importance for individual loyalty and intelligent co-operation from the best foundation for industry to build on.

Your committee is entirely concerned in the matter of intelligent co-operation and has for several years been collectively and individually studying the best means of advancing the interests of the pulp and paper industry through its employees by education.

We, with others who have considered such things as the matter before us, have realized that the providing of a horse trough is one thing, simple in conception and execution; the thirst of a horse, on the other hand, is subject to no such simple rules.

The magnificent contributions of the mills of Canada and the United States to the funding of a set of text books; the labors of the Joint Executive on Text Books; the splendid co-operation of the best minds in the industry, and finally the inauguration of our own schools, with their faculties of interested specialists, are only the provision of the horse trough and its contents.

Some horses will drink and some will not; no horse will drink unless he is thirsty, but some horses will not drink even if they are thirsty. Some have had blinders on so long they cannot see the trough. Some are working on the treadmill and can't stop to drink. Some do not like the smell of the water. Some are nervous and high-strung because there has been too much use of the curb and check rein; they get to the trough because the driver thinks only of transportation of commodities and has not figured on the maintenance of the beast; that is, he puts economics first.

All managements desire co-operation on the part of the employees, but some do not realize that the "Co." plays vital part in co-operation. If an employee wishes to take up some form of study to make him better fitted to assist in production, everything possible should be done to encourage him. It is a herculean task for a man to take up a course of study, whose only foundation is three or four years at a grammar school and which ended perhaps fifteen years ago.

He must add to that foundation the elements of mathematics, physics, and chemistry before he can hope to give intelligent assistance to development, or even study properly the details of his own job.

It is the experience of all correspondence schools that the greatest difficulty comes in the drudgery of the elementary section. This is absolutely essential though it may not have immediate application; but it is from this that the employer will reap the greatest harvest and there he should be most interested in assisting and encouraging his employee.

Your committee begs to advise strongly against a tendency to feel that the books provided by the Joint Committee's efforts partake of the nature of cook books. They are, of course, intended for reference, but are primarily text books and must be studied systematically with due sense of proportion.

Your committee rejoices in the arrival of a new member of our family of text books.

Vol. 4 is a welcome addition, and maintains the traditions and justifies the optimism of its instigators.

It is a book of 527 pages of text, with illustrations, divided into six sections as follows:

Section 1.—Preparation of Rags and Other Fibers, 62 pages, 19 illustrations, by E. C. Tucker.

Section 2.—Treatment of Waste Papers, 72 pages, 21 illustrations, by E. T. A. Coughlin.

Section 3.—Beating and Refining, 80 pages, 32 illustrations, by A. B. Green, with a Bibliography of 6 pages, by C. J. West.

Section 4.—Loading and Engine Sizing, 49 pages, 14 illustrations. Loading, by Ross Campbell and Engine Sizing, by J. A. DeCew.

Section 5.—Coloring, 54 pages, 4 illustrations, by the Dyestuffs Committee of TAPPI in collaboration with Otto Kress.

Section 6.—Papermaking Machines, 210 pages, 83 illustrations, by J. W. Brassington.

In addition to the authors the editor and the committee in charge of the preparation of the work credit a long list of companies and individuals for helpful service and advice.

All that was said of the third volume covering the Preparation and Treatment of Wood Pulp may be repeated. Its successful accomplishment is unique as it represents the co-operative effort of the pulp and paper industry of a whole continent. Never has such care and expense been devoted to the preparation of an industrial work of instruction and reference.

Each section after being written was examined and criticized while in manuscript by several competent authorities. The book is in fact the work of more than one hundred men prominent in the industry.

When the final volume of the set, now well advanced, is completed it would be difficult to exaggerate the importance of the achievement or to extend too much praise to the editor-in-chief, J. N. Stephenson, and those who have so ably assisted him.

The present status of Volume 5 is as follows:

Section 1.—Paper Making Machines, by J. W. Brassington, 70 pages, complete and ready for printer.

Section 2.—Hand-Made Papers and Tub Sizing: Part 1, by Dard Hunter; Part 2, by R. O. Harper, 50 pages, complete but for lettering on six illustrations.
Section 3.—Paper Finished, by W. D. Sommerville, 40 pages, manuscript ready for printer; some illustrations to be prepared.
Section 4.—Coated Papers, by Norman Clark, 50 pages, manuscript in hand, checked by committee, illustrations to be prepared.
Section 5.—Definitions and Manufacturing Data, by W. G. McNaughton, and others, 40 pages (perhaps), material in hand and undergoing revision.
Section 6.—Paper Testing, by T. A. P. P. I. Committee, 50 pages, half done.
Section 7.—General Mill Equipment and Materials, 100-150 pages. Requires manuscript on Instruments, Accessories and Steam.

In our report of last year we emphasized the fact that it is now possible for anyone, anywhere, to obtain the fundamentals of a good education, applied in particular to the pulp and paper industry in America.

There are now three universities and two special schools which provide courses for those wishing to make a lifework of this interesting and important industry.

The University of Maine provided the first American school of paper making, and now has the following in attendance:

Post graduates 6
Undergraduates majoring in this subject..... 14

Many regular chemical engineering students also are taking parts of the pulp or paper courses. Twelve men attended the school at Maine University last summer.

The New York State College of Forestry at Syracuse University has splendid equipment for laboratory and class room work in pulp and paper. Here there are about forty men specializing in pulp and paper, averaging about ten men in each year.

The University of Wisconsin, at Madison, Wis., is carrying on courses in paper, both by class room and correspondence. Ninety-six men are registered in the correspondence courses, which cover Vol. 3 of the text books in particular. Forty of these are in one unit from one of the pulp centers of the state. The others are entered as individuals. The records show that approximately one-third of the students are college trained, one-third of high school standing, and one-third with only public school education.

The Institute of Industrial and Domestic Arts has now close to five hundred men registered, of which 50 per cent have already sent in work.

The latest school of paper making is that opened in November last by the Quebec Government, at Three Rivers. The initial class opened with about fifteen students.

For the present the school will be conducted on part time and in such a way as not to disturb the mill shifts. The students will give nineteen hours a week, all of which will be at the school. Extra-mural work for French students in connection with this school will be carried on by the Institute of Industrial and Domestic Arts.

There is a local board of representatives from mills in Three Rivers, and the Canadian Pulp and Paper Association has appointed an advisory committee to assist the provincial government and school staff.

The success of students taking courses of self-study, in mills or in either of the institutions referred to depends in very large measure upon the active support of executives, and your committee urges, therefore, not so much that financial help be given as that those that sign up for such courses may see that their employers are actively interested and ready to facilitate their progress.

Several large mills are carrying on classes, notably the Nekoosa Edwards Co., where 131 employees were registered last year and will go further this winter, while many more are beginning in the 1923-24 session.

McGill and Toronto Universities have for several years provided annual courses of lectures in pulp and paper manufacture: these lectures being given by two members of your committee. The practice of taking undergraduates during vacation periods has become quite general and is recommended in spite of some drawbacks.

From the foregoing it will readily be seen that ambitious employees in the manufacture of pulp and paper have unexcelled opportunities of advancement and that high school or college students desiring to make the industrial field the scene of their life's endeavors have unsurpassed advantages, and a welcome in pulp and paper.

We can hardly conclude with a more effective paragraph than this of Marshall Field's—

"The man who puts additional capital into his brains—information, well directed thought, and study of possibilities—will surely get increased returns."

All of which is respectfully submitted,
Geo. Carruthers, C. Nelson Gain, J. N. Stephenson, A. P. Costigane, T. Linsey Crossley (Chairman).

Information is the great thing in education.

APPRENTICESHIP

Your committee, appointed following the last annual meeting to study the subject of apprenticeship, has been fairly active during the year, but has not yet reached a point in its investigations that would justify it in recommending a definite system of apprenticeship for the pulp and paper industry of Canada.

Early in the deliberations of your committee it was decided that if a system of training was to be introduced in Canada it would be advisable to seek the co-operation of the American Technical Association so that, if possible, a uniform system of training might be inaugurated which would apply to all mills in Canada and the United States. At the same time it was deemed advisable to secure the co-operation of the American Superintendents Association since, if a system of training was introduced, the onus of training apprentices would rest largely on the shoulders of superintendents.

Following along this line, communication was established with the two bodies mentioned, and a joint meeting of representatives of the American Technical Association, the American Superintendents Association and the Technical Section of the Canadian Pulp and Paper Industry was held in Buffalo on September 14th, 1923. The result of that meeting was the appointment of a joint international committee along the lines of the joint committee on education. Since then considerable missionary work has been done in sizing up the situation and getting the viewpoint of executives and practical men in the industry, but a great mass of detailed information will yet require to be collected and studied by your committee before a definite scheme can be submitted for your consideration. Your committee is hopeful that the discussion on this report will bring forth much information for the future guidance of whatever committee you may appoint to carry on the work.

Your committee respectfully submits the foregoing as a progress report.

T. Linsey Crossley, George Carruthers, C. Nelson Gain, J. N. Stephenson, A. P. Costigane, Chairman.

In elaboration of the report just read I would like to mention one or two points affecting apprenticeship which your committee would like to hear discussed today.

1—Approval of the principle of apprenticeship training.
2—Term of apprenticeship.
3—Period of probation.
4—Age limits.
5—Education.
6—Wages.
7—Sons of employees to have preference in filling positions as apprentices.
8—Avoid creation of a privileged class.
9—Definite program of progress in each department.

1—Approval of Principle

A resolution approving the principle of apprenticeship training passed at this meeting would be of great assistance to the committee struggling with this problem. The favorable finding of a body of men in the industry, who themselves are trained and educated and whose influence in the industry is becoming stronger every day, must of necessity carry weight and would go far to create a favorable atmosphere in advance, and would tend to secure for any scheme the committee may ultimately submit to the industry at large at least sympathetic consideration.

2—Period of Probation

It is a recognized fact that when a boy leaves school he has little or no idea what learning a trade or profession means, and has no means of judging whether or not he will like any particular industry or trade. In view of this fact would it not be worth while to consider whether or not a period of probation was advisable? If such a period was established for, say one year, during which the youth was passed from one department to another, at the end of the year he would be in a position to make up his mind just what branch of the industry he would prefer and from then on his apprenticeship term could be served at the trade of his choice. The experience he gained of other departments would always be useful to him, no matter what particular branch he decided

to follow. This method also would allow an apprentice who on trial found he did not like the industry to drop out.

I have had the opportunity from time to time to discuss the question of apprenticeship with men in the industry representing nearly every branch—mechanics, machine tenders, millwrights, electrical engineers, pulp makers, etc., and am convinced the majority of employees are favorable to the introduction of a system of training. Men who have themselves served an apprenticeship and have sons approaching the age of leaving school, were emphatic in their arguments in favor of such a scheme. A little inquiry into conditions in some of the mill towns revealed several unfortunate victims of the present lack of system. Young men who had from time to time been employed in the mills in various capacities, sometimes for a year, sometimes two years or longer, been paid off owing to slackness or other reasons, and found themselves, due to lack of training, without a trade. Some of these had, during their period of employment, contracted domestic responsibilities and settled down into the ranks of unskilled labor. Is it not a great misfortune that young Canadians of good average education are left to struggle through life without the opportunity of mastering some trade?

In presenting this report and advocating the introduction of a generally recognized apprenticeship system, your committee feel they are putting forward a principle which if adopted will not only greatly increase efficiency in the industry as a whole, but will also materially improve the prospects of the youth of Canada.

TECHNICAL RESEARCH

At the last annual meeting, held in January, 1923, the Committee on Technical Research put forward a proposal for the appointment of a director of technical research whose duty it would be to co-ordinate and direct the research work being carried on at the various mills. After considerable discussion it was decided to leave the matter in abeyance for a year and the committee, with power to add to its number, was requested to continue in office.

After this meeting the committee felt that the industry at large was perhaps not sufficiently familiar with the value of co-operative research to act upon the proposal put forward. It was decided, therefore, to carry out a campaign of investigation and education so that when the proposal, or some alternative proposal, was next brought forward, the members of the Association would be better prepared to discuss the matter.

In accordance with this view, the services of Mr. E. P. Cameron, in charge of the Pulp and Paper Division of the Forest Product Laboratories, were engaged and he was instructed to visit the executives of the various mills and ascertain their views as to the desirability and practicability of such co-operation in technical research as well as to investigate their facilities for research work and report his findings to the committee.

Mr. Cameron visited a number of the more important as well as some of the smaller mills, the result being to convince him, and later the committee, that the industry was not ready for the scheme as proposed by the committee and submitted to the Association, but that a considerable sentiment existed favorable to co-operation between the industry and the government in carrying on, extending and developing the work of the Pulp and Paper Division of the Forest Product Laboratories, provided such co-operation could be arranged upon a practical basis that would insure good results to the industry.

After consulting with members of the committee, Mr. Cameron was directed to pursue his investigations further and to base them upon the suggestions put forth by a majority of the mills already visited. Mr. Cameron continued his investigations and made a final report, of which copies are available to any desiring them.

At a meeting of the committee held on September 14th, Mr. Cameron's report was duly considered and the decision arrived at that the plan of co-operation between the Government and the Association as proposed was one worthy of further investigation as to its feasibility and practicability. A subcommittee was thereupon appointed to inquire into and report upon the present condition of the Pulp and Paper Division of the Forest Products Laboratories, the possibilities of increasing its facilities and its general efficiency and of bringing them into more intimate association with the industry as well as to ascertain to what extent and in what manner the industry, through the Canadian Pulp and Paper Association, might best contribute to that end.

Messrs. O. F. Bryant, R. W. Hovey and C. V. S. Hawkings were appointed to this subcommittee, and they have made a report which is available for reference. The main features of this report may be summed up as follows:

(1) The Pulp and Paper Division of the Forest Products Laboratories affords an excellent basis for the development of an efficient organization for the investigation of pulp and paper problems.

(2) It will be necessary to build up the personnel and strengthen the present organization.

(3) When completely reorganized the expenses of the Division will be approximately $59,600 annually. The Government appropriation at present amounts to $36,000 annually.

(4) If an appropriation is made by the Association there should be some definite understanding with the Government that the Association maintain some control over the expenditure of the amount involved and some authority over appointments.

The subcommittee also came to the conclusion that provided an acceptable arrangement can be entered into with the Government, having in view the ends outlined above, the Association should vote an annual contribution of $20,000 for the first year and not less than $20,000 a year for the succeeding four years as its share towards the general scheme.

Your committee has given consideration and approval to the report and findings of the subcommittee.

Your committee has made no approach to the Government to ascertain its disposition in the matter, believing that before doing so it should have the authority of the Association to make a definite commitment as to the amount of financial support the Association is ready and willing to contribute.

Your committee, therefore, submits the proposal herein outlined, with the committee's endorsement, and recommends that authority be accorded to the committee to negotiate with the Government along the lines proposed, with the understanding that if the negotiations terminate satisfactorily, the Association will contribute not less than $20,000 a year for a period of not less than five years, and will co-operate in the direction of the Pulp and Paper Division through the medium of a committee of its members specially appointed for that purpose.

The report of Mr. Cameron on the attitude of the industry and the report of the subcommittee which investigated the Pulp and Paper Division of the Forest Products Laboratories are submitted as supplements to this report.

All of which is respectfully submitted.

Committee on Technical Research: C. H. L. Jones, Chairman; R. A. McInnis, F. A. Sabbaton, W. G. Mitchell, Dr. John S. Bates, R. W. Hovey, O. F. Bryant, C. V. S. Hawkings.

WOOD MEASUREMENT

At the last Annual Meeting of the Technical Section, the question of the measurement of wood came up and led to some discussion. It was suggested that a committee be appointed to look into the matter and this committee was later on formed, consisting of:

Ellwood Wilson, Laurentide Company, Ltd.
R. W. Stearns, Abitibi Power & Paper Co.
J. G. MacLaurin, Riordon Pulp Corporation, Ltd.
P. J. Murer, Riordon Pulp Corporation, Ltd.

Your committee has confined the greater part of its work to a study of the more important of the units of measurement now in use by our industry, particularly with the object of throwing more light on their value towards providing a correct quantitative measure of solid wood.

It might be well to mention here that, not only is there a fundamental difference between the units themselves, but also a considerable lack of uniformity in their application at the different mills.

The industry has spent considerable money on equipment, engineering staffs and laboratories, so that raw materials such as coal, sulphur, stone, lime, etc., may be carefully weighed and analyzed; but, strange to say, our principal and most expensive raw material—wood—has received comparatively little organized or unorganized research work, either as to measurement, quality, or yield characteristics. In that connection it is significant to note, from Chart No. 1, the general upward trend in the cost of wood and wood consumption in this country, which in itself suggests the necessity of stimulating research work on this question.

Your committee hopes that its work may be helpful towards lessening the present uncertainty and difficulties, and also assist materially in arriving at a conclusion as to what change is advisable in regard to units now in use.

Units of Measurement

The units in general use in this country are "Feet Board Measurement"; "Cord"; and, to a more restricted extent, the "Cubic Foot."

"Weight" has also of late been introduced in some mills.

These units, with the possible exception of weight, are such

that a measurement in terms of the unit applied can be obtained with reasonable accuracy. The question arises, how-

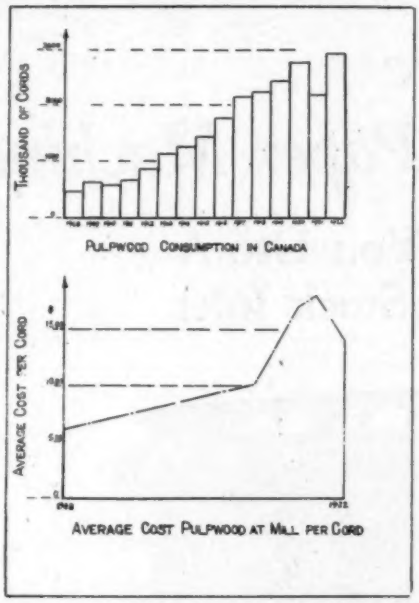


Fig. 1. Pulpwood costs and consumption in Canada, 1908-1922

ever; as to the sufficiency of the units for determining the actual amount of wood.

Feet Board Measure

It is hardly necessary here to go into the history or purpose of the unit. Suffice to say, we have several different standards and, in addition, there are many points of disagreement

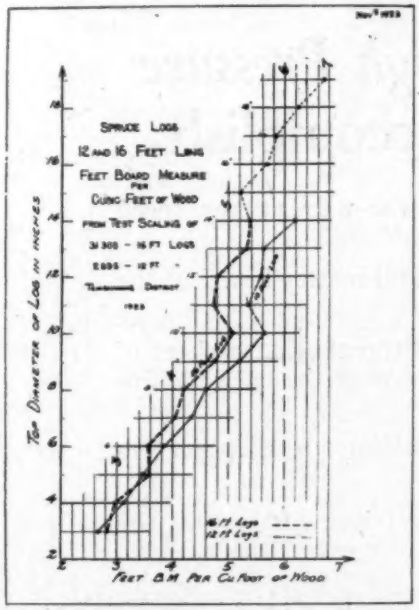

Spruce Logs
12 and 16 Feet Long
Feet Board Measure
per
Cubic Feet of Wood
Top Diameter of Log in Inches
Feet B.M. per Cu. Foot of Wood

Fig. 2. Feet Board Measure per cubic foot of solid wood; 12' and 16' logs

between them. This unit, being intended to indicate the lumber which may be cut from logs, does not, of course, take into consideration the solid wood not classed as lumber but which is, nevertheless, pulp mill raw material. Because of factors such as the empirical nature of the rules themselves, the taper of logs, and the varying proportion according to diameter between the whole section and the lumber section of the logs, the equation of Feet Board Measure and solid wood contents is not a constant. The general trend is that the Feed Board Measure per solid wood unit increases with

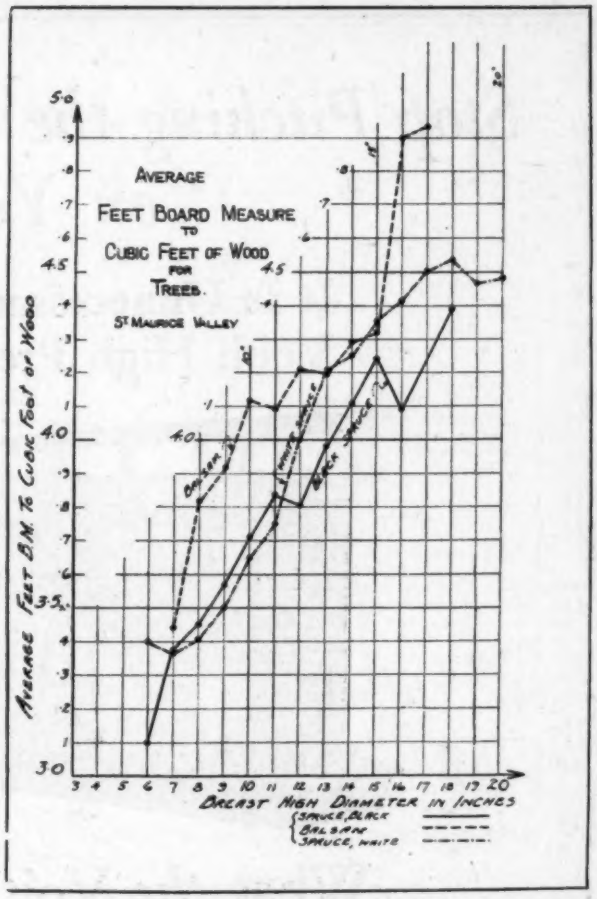


Fig. 3. Feet Board Measure per cubic foot of Wood for given breast high diameter

the diameter, but the increase is not uniform—in fact is quite erratic.

Chart No. 2 illustrates the variation in the conversion factor between actual wood contents in Cubic Feet and Feet Board Measure, Quebec Rule.

The data, upon which the curve is based, was derived from a special test measurement made last summer of more than

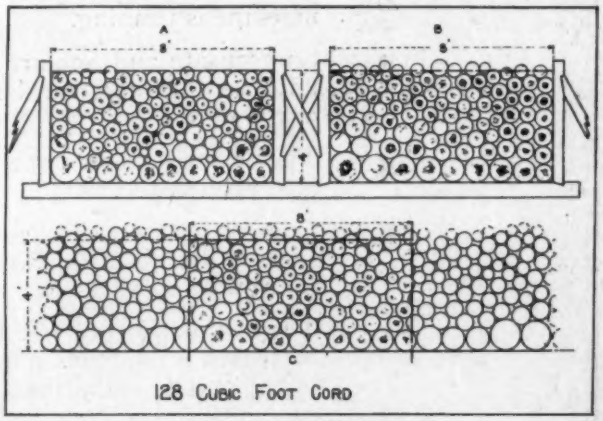


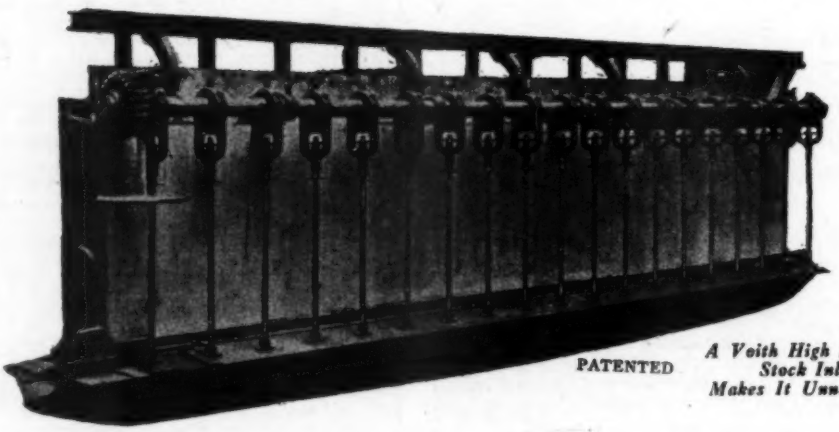
Fig. 4. Forms of cord measurement

31,000 sixteen foot logs, and about 3,000 twelve foot logs, which were scaled at both ends to nearest quarter inch.

Chart No. 3 gives similar information with respect to trees in, and representative of, the St. Maurice Valley, according to their Breast High Diameter. As in the case of logs, it will

Stop Pitching the Wire on Your Paper Machine

It Is Unnecessary If You Use A Voith High Pressure Stock Inlet



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A Voith High Pressure Stock Inlet Makes It Unnecessary

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1. It feeds the stock directly onto the wire at any speed desired.
2. It is unnecessary to pitch the wire no matter how fast the machine is running.
3. So accurate and fine are the adjustments that a sheet of uniform thickness can be obtained over the entire width of the wire.
4. The device is easy to operate and adjust. Its construction is simple and sturdy.
5. It exerts no pressure on the wire thus eliminating the friction and resulting wear caused by use of slices. Furthermore, no slices are required.

The installation of a Voith high pressure stock inlet means increased production, a better sheet of paper and a saving in the cost of operation.

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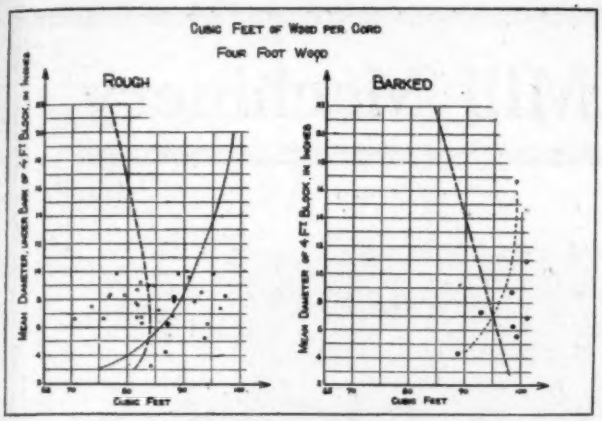


Fig. 5. Cubic feet per cord of 4-foot blocks

be noticed that there is a general, but erratic increase in the Feet Board Measure per Cubic Foot of solid-wood with increasing diameter. This information is from a test made of over 4,000 trees in which measurements were obtained of the height of the stump, the length of the top left, the length and diameter of both ends of every log, scaling Feet Board Measure of Quebec Rule and computing volume inside bark in Cubic Feet.

An interesting comparison of the variations of conversion factors would be, for instance, to consider a 6" and a 15" white spruce tree. It may be computed from Chart No. 3 that

1,000 F. B. M. = 294 cu. ft. of wood in first case
1,000 F. B. M. = 233 cu. ft. in the second
— a difference of more than 20 percent.

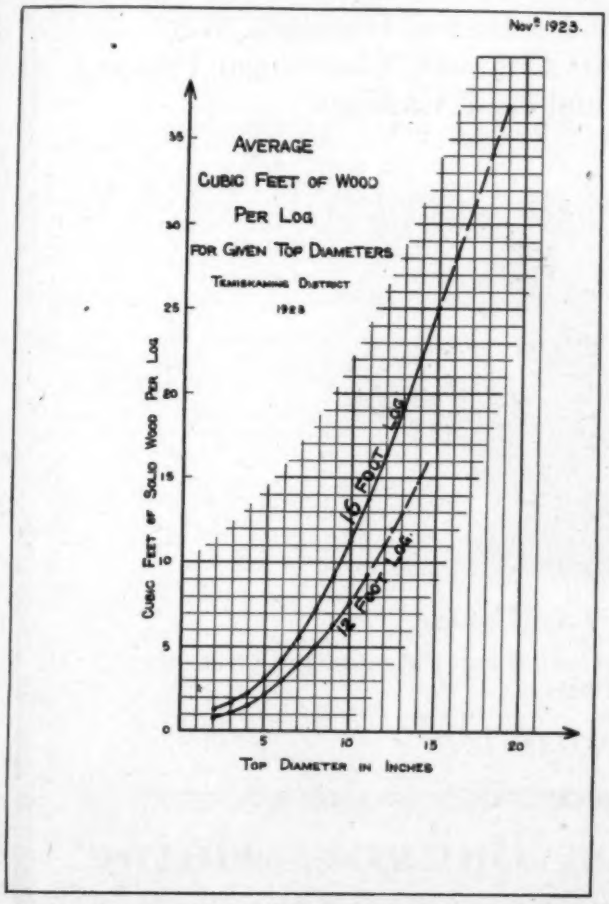


Fig. 9. Average cubic feet per log; Jack-ladder measurements on spruce logs

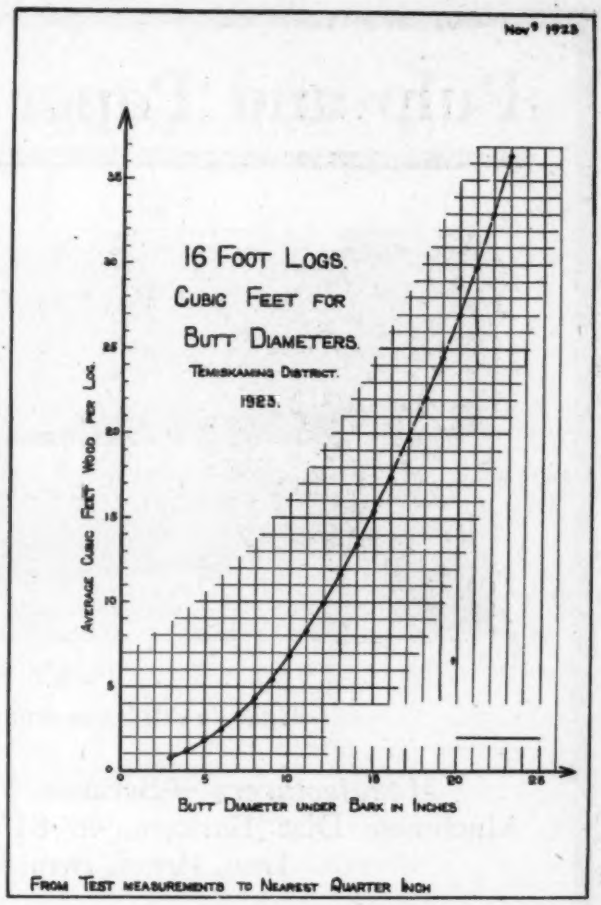


Fig. 10. Average cubic feet per log; Jack-ladder measurements on spruce logs

The foregoing shows that the application of conversion factors between Feet Board Measure and actual wood contents is uncertain, and exceedingly undesirable, as far as a measure of solid wood is concerned.

Cord

The first question that comes in mind is "What is a Cord?" The unit represents 128 cubic feet, but, so far, the exact form of this 128 cu. ft. has apparently never yet been legally defined in this country. The following may illustrate the possibilities in this matter of form.

First: It is, of course, obvious that the length of the logs making up a Cord has a great bearing on the amount of solid

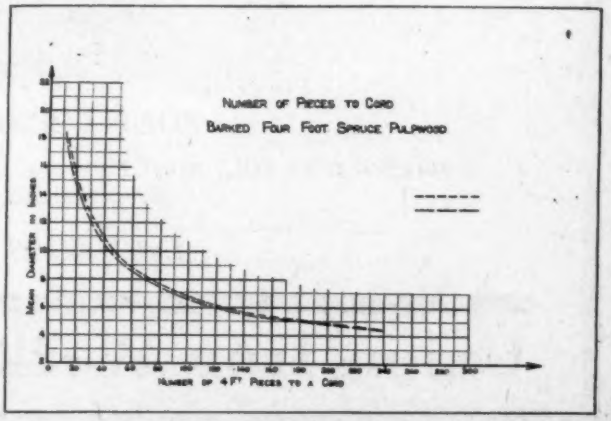
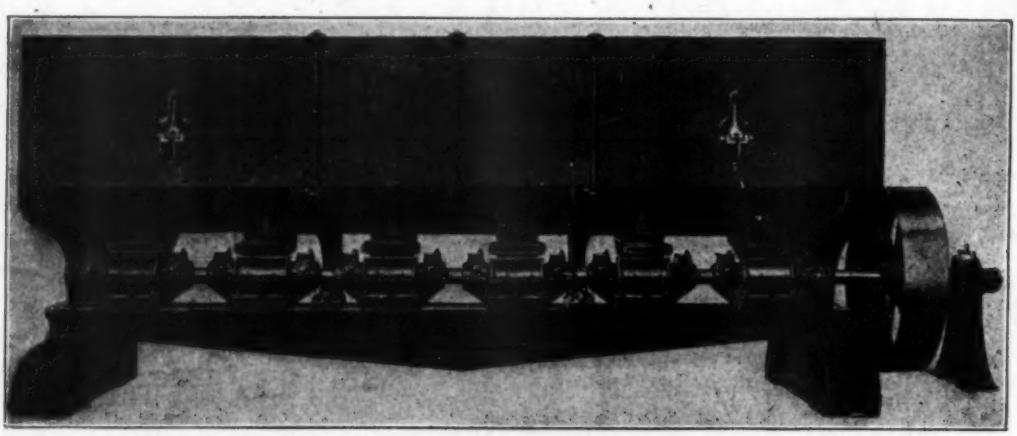


Fig. 6. Barked 4-foot spruce blocks to the cord

Pulp and Paper Mill Machinery



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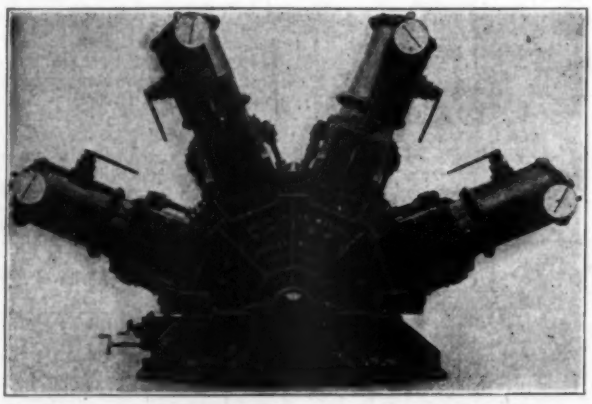

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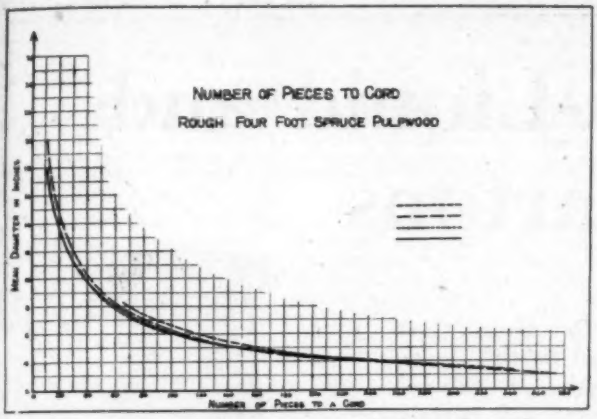


Fig. 7. Unbarked 4-foot spruce blocks to the cord

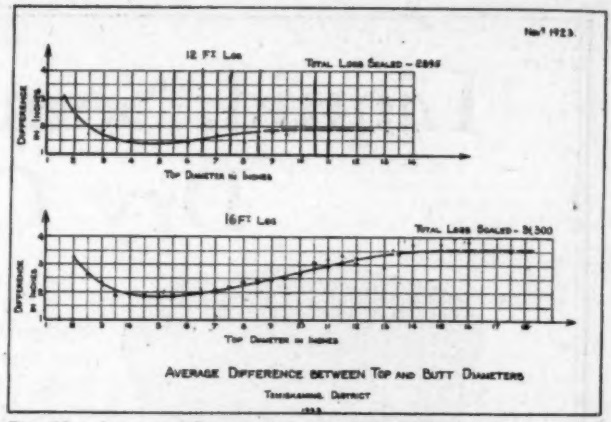


Fig. 11. Average difference in top and butt diameters of spruce logs in Temiskaming District

wood therein, for instance, the shorter the blocks the more compact will be the piling—and vice versa.

Secondly: The following factors, which in practice may affect the amount of wood contained in the same section, 4 ft. by 8 ft. are illustrated on Chart No. 4.

(A) is representative of a 4'x8'x4' frame with wood piled so as to be confined altogether within the four by eight area, or equivalent thereto;

(B) is a similar frame piled higher and all wood below four foot height included.

(C) shows a long and high pile, and the cord here is represented as including all solid wood found within four by eight section.

It is apparent that, other conditions being similar, the least solid wood will be contained in (A) and the greatest in (C). These variations are, of course, significant as to their effect on the wood contents of a cord.

In addition to the above mentioned, it is also known that there are considerable variations in amount of wood found in a cord of any one given form—even in the case of blocks with practically the same average diameter. There are many factors contributing towards these conflicting results, such as deformities, bends, thickness of the bark, taper, and also, very materially, the manner of piling which, in itself may vary the solid content up to 20 per cent or possibly more.

Chart No. 5 illustrates the great differences in the wood contents of cords of unbarked and barked wood.

It will be seen that, in the case of unbarked wood, the contents vary from about 70 to 95 cubic feet solid wood, and for barked from about 87 to 101.

In addition to these wide fluctuations found in a cord, it might be mentioned that in one Province 115 cubic feet of solid wood is termed a "Cord."

An endeavor is oftentimes made to estimate the cordage of wood by counting the number of blocks, but, naturally this is a rather unreliable method as the number is affected to a great extent by even a slight change in the diameter.

Charts Nos. 6, 7 and 8 give the number of pieces per Cord based on tests made by several mills.

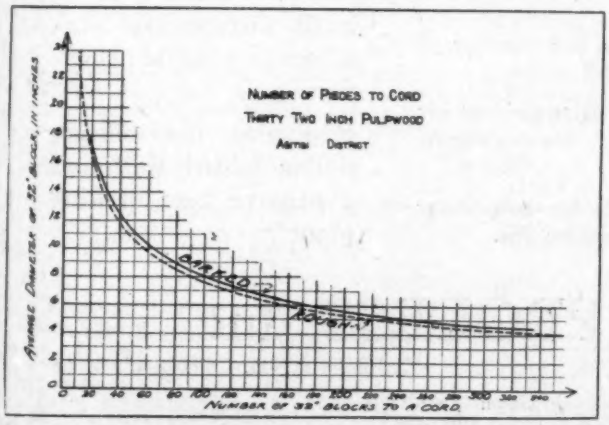


Fig. 8. Number of barked and unbarked 32-inch wood blocks per cord

The many factors making possible large variations in solid wood contents, made it evident that the cord can be used with a reasonable degree of confidence as a reliable wood measure.

Cubic Feet of Wood

The use of this unit of Measurement has only been initiated in Canada within recent years, and it appears to be receiving increasing attention. Generally speaking, its practical application is as easy, if not easier, than the units previously referred to and it is hardly necessary to add that, as a measure of volume, it is in accord with scientific principles.

Weight

Weight also is a definite quantitative unit, and, although

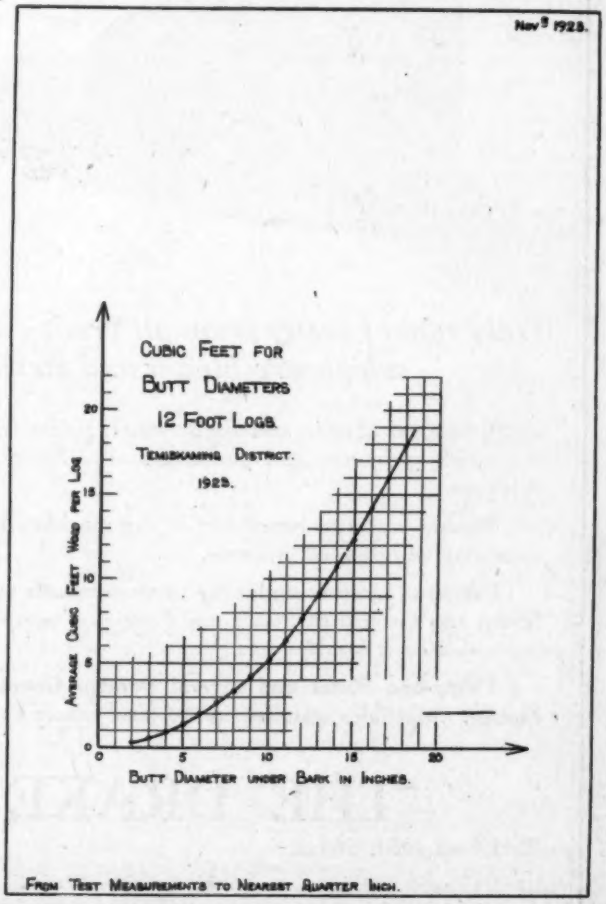
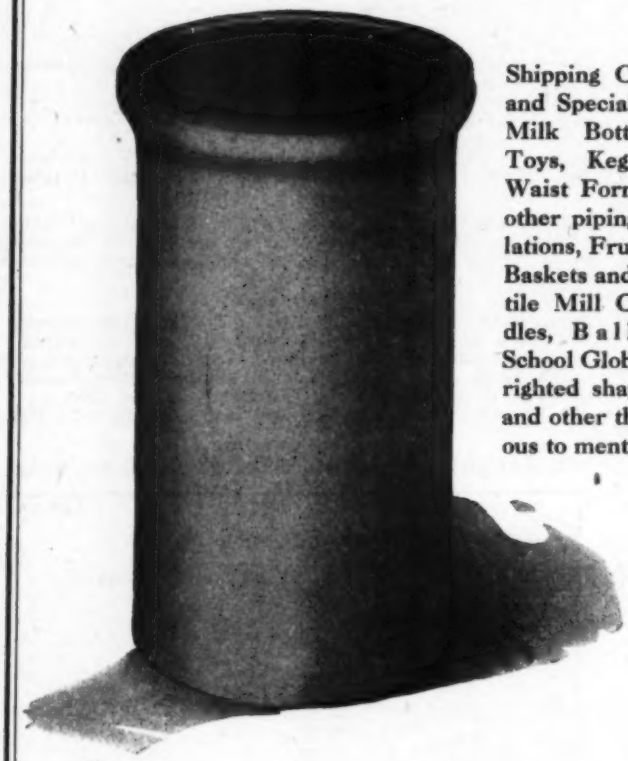


Fig. 12. Average cubic feet per 12 ft. spruce log for given butt diameters, from Jack-ladder test

Liquid, Semi-Liquid and Dry Cartons



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not employed extensively as yet for wood measurement, the indications are that it may play a large and important role in the years to come. It application, up to the present, has been confined almost altogether in the automatic weighing of chips.

In considering the adoption of a new unit we must point out the present difficulty of comparing costs and quantities due to lack of a common unit. One objection raised by woods operators is that a change to a cubic foot basis might increase dues to the Government, but we feel that this matter will be satisfactorily adjusted.

Your committee recommends the adoption by the industry of the solid cubic foot for all woods measurements. The committee has already done considerable work and recommends further studies and investigations of the relation between weight and density, soundness and yield.

All of which is respectfully submitted.

P. J. MURER,
Chairman.

ABSTRACTS AND PUBLICATIONS

Your committee has not been particularly active since previous organizations of efforts has resulted in a continuous publication of abstracts of literature and reviews of the more important books that have been produced during the year. Co-operation has continued with the Technical Association of the Pulp and Paper Industry and reviews have appeared simultaneously in the Pulp and Paper Magazine and the Paper Trade Journal. Our staff of abstracters are to be commended for their prompt and careful summaries of current magazine articles and for the careful way in which they have prepared their abstracts.

It should be mentioned that this work is being conducted without cost to either of the Associations, partly because of the generous co-operation of the publications mentioned and largely on account of the very favorable rate of remuneration which has been accepted by the abstracting staff.

Shortly after the annual meeting the committee issued the year book of the section giving a resume of the business meeting and reprinting the principal addresses at the last previous annual meeting. The committee is endeavoring this year to have annual reports ready a little more promptly. The committee also assisted in the publication of a bibliography on Testing Pulp for Strength for the Committee on Standard Methods. The committee wishes to suggest that members submitting diagrams and charts for publication remember that the standard sizes of cuts are 3½ in. and 7 in. wide. This means that a reduction from the original is usually necessary. Letters and figures should, therefore, be sufficiently large and clear to be legible after reduction. Use double space on the typewriter.

All of which is respectfully submitted.

J. N. STEPHENSON, Chairman.

BOOK AND WRITING SECTION

The book and writing paper manufacturers find themselves, like several other branches of the industry, faced with the problem of an excess potential production and the need of new markets. New machines, brought into operation during the year have enlarged our producing capacity to 75,000 tons annually of book, bond and fine papers. This far exceeds the domestic demand and world-wide conditions at present militate against us in the foreign markets. Our difficulties have been further increased by the additional tariff preference accorded the United Kingdom by our Government and which has been taken advantage of, in some instances, by British paper manufacturers to undersell us in our own market.

Despite these unfavorable circumstances it is gratifying to be able to record that progress has been made during the year both as to production and shipments and that our exports of fine papers also increased in amount as compared with the previous year.

Production figures are as follows:

	1922 Tons	1923 Tons
Book	30,729	32,573
Writing	18,326	16,860
	49,055	49,433

Exports of book and writing papers amounted to 68,113 cwts this year against 43,922 cwts last, an increase of 55 per cent.

Prices, on the whole, were fairly stable, especially on bonds and writing.

Mr. C. Howard Smith, one of our members, returned from a visit to the Orient during the year and gave us the benefit of his observations as to trade conditions abroad.

Our mills have co-operated in a joint advertising campaign with the printers and paper-dealers of Winnipeg and the middle West and we are preparing to join in a similar campaign in British Columbia. Eastern Canada was covered with this campaign a year ago.

Our Section has held ten meetings during the year, all of which have had a representative attendance.

H. B. DONOVAN, Chairman.

NEWSPRINT SECTION

The past year has been a very satisfactory one for the members of the Newsprint Section. The increased demand which characterized the latter part of 1922 continued throughout the year and the Canadian newsprint mills were able to operate at capacity during this time. The heavy consumption of newsprint in the United States has resulted in greater production and in this respect the Canadian output has again established a new record.

Various additions to the capacity of the Canadian mills have been made during the year and the new year will see the capacity still further increased. Six new machines commenced operation in 1923, two at St. Lawrence Paper Mills, Three Rivers; two at Fort William Pulp and Paper Co., Fort William; one at Belgo Paper Co., Shawinigan Falls, and one at Bathurst Co., Bathurst, N. B. Three other machines commenced to make paper at the beginning of 1924, viz: one at Belgo Co., Ltd., one at Kenora and one at Donnacona; these machines added some 285 tons to the daily capacity and it is understood that their production is all taken care of for this year.

Production of newsprint by the Canadian mills during 1923 amounting to 1,166.225 tons or a monthly average of 106,020 tons.

The large increase in production during 1923 will be seen when compared with figures for previous years:

Year	Production
1920	875,696
1921	805,134
1922	1,081,364
1923	1,166,225

Our exports of newsprint in 1923 were principally to the United States, which accounted for 1,021,558 tons of a total exportation of 1,043,139 tons. The factor of European newsprint still has to be taken into account in this market and imports from this source were considerably greater than in the previous year, the total being close to 200,000 tons. In addition to these shipments to the United States the European countries have practically monopolized the market in South America, the prices in that territory being too low for our mills to compete. The Australian market has also been practically lost to Canadians through the operation of the preference granted to British paper, and our shipments both to New Zealand and South Africa were below those of the previous year. The result is that our trade with overseas markets has become insignificant and we are almost entirely dependent upon the market in the United States.

The monthly record of exports is as follows:

	1923	
	Tons	Value
January	82,789	$ 6,134,827
February	84,395	6,360,140
March	113,450	8,609,766
April	78,378	5,866,001
May	98,901	7,448,162
June	92,852	7,006,722
July	92,959	7,045,653
August	104,568	7,936,505
September	90,930	6,870,190
October	100,722	7,505,041
November	103,195	7,684,709
December	.....	.....
Total 1922	959,514	$68,362,817

A number of meetings of the Section have been held during the year for the discussion of matters of interest to the members.

The Newsprint Section desires to express its sense of loss in the death of Mr. F. H. Anson, of the Abitibi Power & Paper Co. and to extend its best wishes to his successor, Mr. L. R. Wilson.

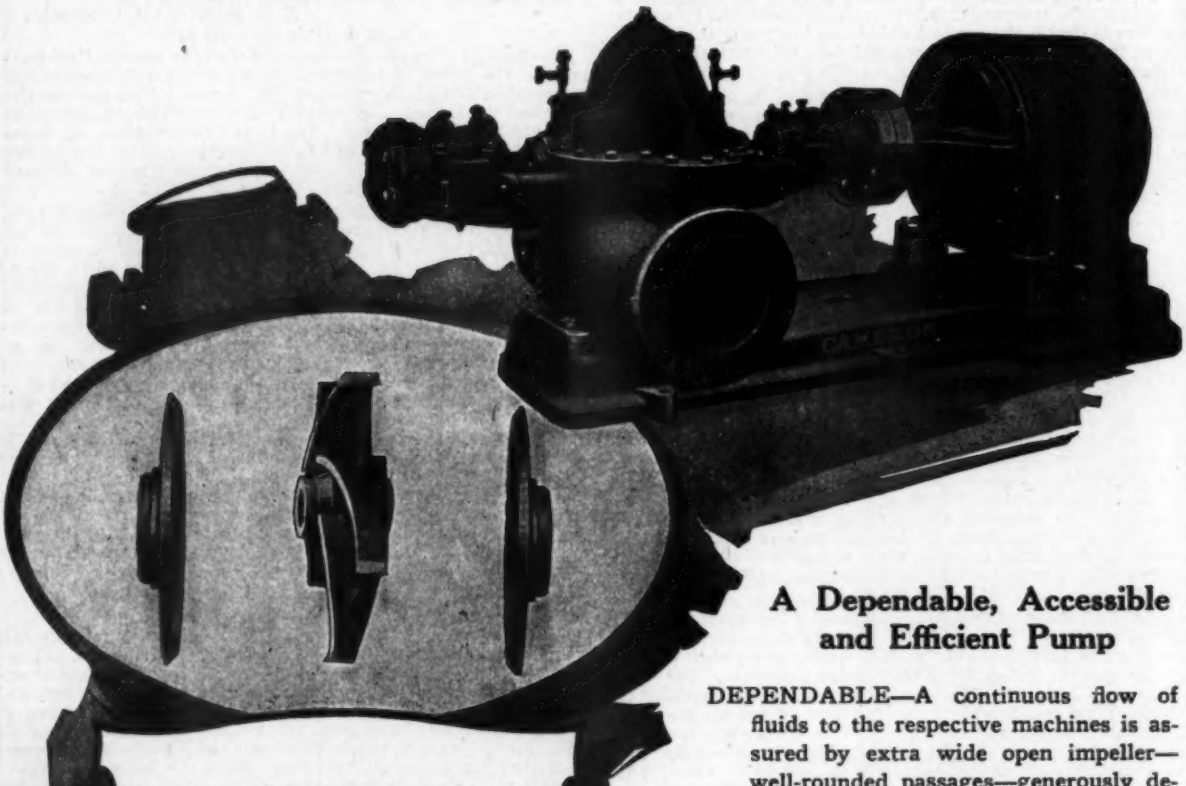
By J. A. BOTHWELL, Chairman.
L. J. A. BOTHWELL, Chairman.

WRAPPING PAPER SECTION

During the year 1923, the Wrapping Paper Section enjoyed better business than was anticipated.

There has been a fair run of orders and remarkable steadiness both in regard to prices and volume of orders. Prices were maintained at a satisfactory level until about the begin-

Built to Pump Stock



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ning of December when competition in kraft paper from Scandinavian mills forced a reduction in the price of kraft wrappings and a consequent reduction in the price of other wrappings. With the present high cost of labor, materials and transportation, little further reduction can be made without the entire elimination of profit.

The wrapping-paper manufacturers have had frequent meetings during the year and have shown a disposition to cooperate that has proved of benefit to all concerned. If this spirit is maintained it should carry us comfortably through 1924, even though it seems probable that this will be a difficult year.

The Wrapping Paper Section has been from time to time in conference with the Kraft Paper Section, and it is the opinion of a number of members that it would be advantageous to all if these two sections were to operate as one.

The mills reporting to the Association (not including those mills manufacturing kraft only) produced during the year 22,131 tons of wrapping paper made up as follows: Kraft, 7,826 tons; Mill Wrappers, 5,965 tons; Various Grades, 8,340 tons. In 1922 the same group of mills produced 19,207 tons, of which 5,965 tons were Kraft; 5,769 tons Mill Wrappers and 7,474 tons Various Grades. The capacity of the Wrapping Mills was increased by the addition of a new machine at the Dryden Paper Co.

Shipments reported during the year amounted to 21,999 tons, of which 21,380 tons were shipped to Canada and 619 tons exported. The shipments in 1922 amounted to 19,115 tons, of which only 123 tons were exported.

F. J. CAMPBELL, Chairman.

BOARD SECTION

The past year has been fairly satisfactory to the members of the Board Section. While there has been no pronounced activity in business generally there was a steady demand throughout the year and the mills reported an increase in production and shipments over the previous year.

The Beaver Wood Fibre Co. was added to the list of companies reporting to the Association and thus helped to make our records more complete.

The figures on production and shipments for the past four years are as follows:

	Production	Domestic Shipments	Export Shipments
1923	97,959	83,432	14,715
1922	90,889	78,203	12,514
1921	63,407	56,821	5,455
1920	97,710	69,994	27,813

It will be seen from this statement that our production was appreciably larger than in 1922. Shipments, both domestic and export also showed a gratifying improvement. A further increase in the export demand is much to be desired, since in common with other branches of the industry, our production is greater than the domestic market can absorb and we must rely upon other markets to a considerable extent unless production is to be curtailed.

The new classifications by the Department of Customs giving more details of the imports of board into Canada were put into force at the beginning of the fiscal year and have been of value in keeping the members informed regarding competition from other countries.

D. F. Roberston,
Chairman.

COATED PAPER SECTION

The Coated Paper Industry in Canada during the past year has not come up to the expectations formed at the begining of the year. The tonnage of paper and boards made and shipped in Canada was about the same as in 1922. The export tonnage exceeded that of previous years.

Orders during the year have been smaller, necessitating more changes and higher manufacturing costs. The large orders were taken to keep the mills operating and not to make a profit.

Foreign competition in box enamel papers has been very keen during the last four months of 1923 and the mills making paper stock and boards for coating mills must consider this foreign competition in making their prices if they wish to encourage this industry in Canada.

For the last two years there has been a shortage of casein and the price has been very high. This year there will be a surplus and the standard will be higher than last year. About 25 per cent of the casein used in the mills was made in Canada, but the Argentine casein is more uniform and much superior to the domestic product.

A substantial improvement may be felt during the last six months of this year.

All of which is respectfully submitted,

F. H. GAGE, Chairman.

KRAFT PULP SECTION

Conditions in the Kraft Pulp industry have been fairly satisfactory during the year and production has been maintained at close to normal levels. The total output of the mills was a little above that for 1922 although shipments were somewhat smaller than in the previous year.

Towards the end of the year the situation was not so good as in the earlier months and competition from European countries in the United States market became more severe. We had also to meet the competition from manufacturers of kraft pulp now being produced in the United States from pitch pine. Most of this pulp is made from tops of trees heretofore discarded at the stump as being too small for lumber production and also from the slabs and other refuse made at the saw mills in producing sawn lumber. The result was a lowering of prices to unsatisfactory levels which together with a falling off in demand has an adverse effect upon the situation. The increased imports of cheap wrapping paper still further affected the Kraft pulp market and as a result our exports, all of which have gone to the United States, were below those for 1922, as shown in the following table:

EXPORTS OF KRAFT PULP

	1922		1923	
	Tons	Value	Tons	Value
January	9,807	$ 609,943	10,602	$685,759
February	11,437	690,757	9,525	618,342
March	14,415	902,254	15.261	994,428
April	8,162	511,615	9,604	618,025
May	12,575	763,505	11,689	763,925
June	13,109	801,895	12,270	823,847
July	12,887	778,948	12,468	818,787
August	12,658	774,643	14.496	947,153
September	13,503	827,789	11,722	761,695
October	14,088	875,876	13,871	903,974
November	14,546	917,560	12,200	760,496
December	11,148	714,533	.....	.....
Total	148,335	$9,166,818	.....	.....

The domestic demand for Kraft pulp has also been smaller during the year and as in other sections of the Pulp and Paper industry we have had to face the fact that the capacity of our mills is much greater than can be taken care of by the domestic market. It is necessary, therefore, that serious attention be given to the problem of meeting European and other competition in disposing of our surplus production.

Arrangements are being made for an exchange of statistics on Kraft pulp with the Finnish Chemical Pulp Association to be carried out on similar lines to the exchange now being made with the Scandinavian Association. This will be of value in keeping the members informed of the situation in Europe and will round out the information from these countries.

All of which is respectfully submitted,

ANGUS McLEAN, Chairman.

WAXED PAPER SECTION

This being the first report which the Waxed Paper Section have had the privilege of submitting for your consideration, perhaps I may be justified in saying that one of the outstanding features of our industry for the year was its reorganization as a unit of the Pulp and Paper Association. Although the waxing industry was previously recognized through individual membership, the past has created a feeling that collective representation is steadily securing better understandings and our members are duly gratified.

Owing to the widely varied nature of our product it would not be possible to give a concise statistical report on operations. Trade during the past year has shown some improvement but owing to seasonable requirements of certain lines has been somewhat spotty. The demand for waxed bread wrap has been slightly heavier but has not developed to the extent that was anticipated. Consumption of waxed tissues for confectionery wrapping has fallen away somewhat, this being a reflection of high sugar prices which have caused the discontinuance of many lines of penny goods.

Generally speaking the year may be said to have been productive of normally healthy trade, such increase as has occurred being in keeping with the general increased demand for a protective wrapping of all foodstuffs and package goods.

E. A. BRADSHAW, Chairman.

SULPHITE SECTION

While the situation in the sulphite pulp industry improved somewhat over the previous year there is still a great deal of room for further improvement before it can be termed satisfactory. In the early months of the year there was a good demand for sulphite from the United States owing to the prosperous state of business in that country. This state of affairs, however, did not continue and the falling off in

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demand together with the heavy importations from Europe were reflected in less satisfactory market conditions and a low level of prices.

The past year saw a greater production of sulphite pulp and a large volume of pulp exported in spite of the lack of stability in the market and of keen competition from the centres of Northern Europe. It was hoped that the prolonged strike in Sweden and the labor troubles in Norway would have a favorable effect on the market and result in keeping prices at a more remunerative level, but it proved otherwise and the United States imported considerably more pulp from Europe than it did in 1922. It is evident that the consumption of pulp and paper on the continent of Europe has declined greatly and a large amount of these products is thereby released for export to this side of the Atlantic. The United States trade returns show that 350,000 tons of sulphite were imported in the first nine months of 1923 compared with only 237,000 tons in the corresponding months of 1922, an increase of about 50 per cent; 44,000 tons of this came from Germany, which last year only contributed 16,000 tons, and 64,000 tons from Finland as compared with 25,000 tons in 1922. This competition, aided as it is by low labor costs, depreciated exchanges and cheap transportation, is a serious obstacle to the Canadian sulphite manufacturer and will continue to be so so long as the present chaotic conditions in Europe exist.

Canadian exports of sulphite during the year amounted to 353,236 tons compared with 330,788 tons in 1922, an increase of 22,448 tons or 7 per cent. Exports of bleached pulp were 144,430 tons, of which 135,154 tons went to the United States and 9,033 tons to Japan. Unbleached sulphite exports were 208,806 tons, of which 151,323 tons were to the United States; 30,680 tons to the United Kingdom; 15,490 tons to France and 11,313 tons to Japan.

The exchange of statistics with the Scandinavian Association has been maintained throughout the year and has proved of value in keeping the members informed of the situation in Norway and Sweden. Negotiations are proceeding for a similar exchange with the Finnish Chemical Pulp Association and it is hoped to put this into operation in the near future.

There are still some sulphite mills outside of the Association and these have been approached with a view to their joining our organization. While these efforts have not so far been successful, it is hoped that our membership will ultimately embrace all mills making sulphite pulp in Canada. One mill which had ceased reporting to the Association is again on the list of those sending in production returns.

Prospects for the coming year are difficult to outline but general opinion appears to point to quiet, steady business. The presidential election will have its effect on business in the United States and will probably not be conducive to activity in general. There will undoubtedly be keen competition from Europe, possibly greater than in the past year, so that it will be necessary for the Canadian manufacturers to pay strict attention to costs of production and other factors which will assist them in meeting this competition.

C. HOWARD SMITH, Chairman.

MECHANICAL PULP SECTION

Reviewing the past year from the viewpoint of market conditions for Mechanical Pulp, we find two factors which have had a favorable influence on the situation.

1. The abnormally low water conditions existing during the early part of the year.
2. The prolonged strike in Scandinavia.

Low water conditions which are more or less seasonal, were abnormal in January and February and resulted in a stiffening of prices for mechanical pulp. When Spring flood-water occurred later, the usual reaction to lower prices was delayed owing to the strike in Scandinavia which cut off the supply from that quarter and thereby increased the demand for pulp manufactured on this continent. The net result was a fairly constant demand for pulp at good prices throughout the year. The decline in production due to low water in the Spring was offset by the better than normal condition during the last three months of the year. In other words, outside of the abnormal years of 1919 and 1920, the year 1923 has been well above the average as regards earnings for the producer of mechanical pulp.

In my report last year I drew attention to the great fluctuations which in the past have taken place in the market price for ground-wood and suggested certain remedies.

The ground-wood producers' experience during the past twelve months, of fair and reasonably stable prices, must surely have created a desire to maintain this healthy condition. We cannot congratulate ourselves that as a body we contributed to the satisfactory condition which existed during 1923: we simply got a "lucky break" at the hands of the weather man and through the misfortunes of our Scandinavian friends.

There is, however, a lesson to be learned from last year's experience; for if a combination of conditions such as took place in 1923 resulted in prices being maintained at fairly steady levels without any effort on our part, then it seems reasonable to suppose that a combined effort towards stabilization by the ground-wood manufacturers—and by this I mean all ground-wood producers, whether they make their pulp into paper or not—should at least show somewhat similar results. It seems to me that the manner in which the news print manufacturers handle their product is a good example of a better method of marketing and I would suggest to the members of the ground-wood section an effort along similar lines.

Without wishing to appear too positive as to the accuracy of my own judgment regarding the coming year it looks as if we should probably see a demoralized ground-wood market during 1924 unless some constructive action along the lines suggested is taken promptly.

In conversation with several of the Scandinavian producers, particularly in Norway and Sweden, they have always indicated a desire towards more friendly relations with producers in this country so that there is a foundation upon which to build a better understanding that would be profitable to us all. It has often been stated that the Scandinavians were under-selling us because they were taking no profit or were even at times selling at a loss, in order to get business. In isolated instances this may be the case, but on the whole, the Scandinavian producer is able to sell pulp cheaper than we are simply because he can make it more cheaply.

This brings us to another phase of the situation which requires careful study by all manufacturers of wood products in the country. I refer to the question of our woods costs, which is becoming more than ever the really serious factor in our cost of mechanical pulp.

There are two fundamental reasons for increasing wood costs.

1. The gradual depletion of the standing timber close to the mill with the consequent increase in the cost of wood delivered at the mill.
2. The constantly increasing cost of woods labor.

These factors are much more serious in this country than they are in Scandinavia. The forestry policy of Norway and Sweden is bearing fruit in that the proportion of wood contiguous to the mills in their annual cut is fairly constant, while ours is rapidly decreasing. This is a condition we cannot immediately improve. They have also an abundant supply of woods labor so that increases in woods wages occur only as wages increase in all classes of labor. In other words, their labor cost for wood is as constant as their conversion labor cost from year to year. On the other hand, when we examine our woods labor cost in comparison with our conversion labor cost we find a considerably greater increase. This brings us to the matter of our woods labor situation and ultimately involves the question of immigration. Conditions affecting woods labor in this country have materially changed during the last generation.

The Canadian pulp and paper industry has been built up on four fundamental factors.

1. Abundant water powers;
2. Abundant and reasonably cheap wood;
3. Labor that easily adapted itself to the industry;
4. A market so situated geographically that this country was the normal source of supply for that market.

The expansion of the industry has been so rapid, however, that our supply of woods labor is becoming insufficient for our requirements. The increase in woods wages during the last fall as compared with those paid twelve months ago is clear evidence of this; wages increased in several cases from forty to sixty per cent over last year and are likely to go higher rather than lower if the same conditions prevail. The explanation of this is not far to seek. Many mills have been built at the source of wood supply and we find many sections where men who formerly went into the woods are now seeking work in the mill so that they may live with their families throughout the year, rather than undertake arduous work in the woods. It is a common thing today to see a family of boys who formerly all worked in the woods now divided up so that part work in the woods and part in the mill itself. The result is a decrease in the number of woodsmen available year by year, and as additional mills are built this loss will be still further accentuated. On the other hand, the quantity of wood cut each year is increasing and will continue to increase.

A woodsman is just as much a skilled workman as the man who works on a paper machine. It takes years to make a good axe-man, and inexperienced men cannot be picked up on the city streets and sent into the woods without materially

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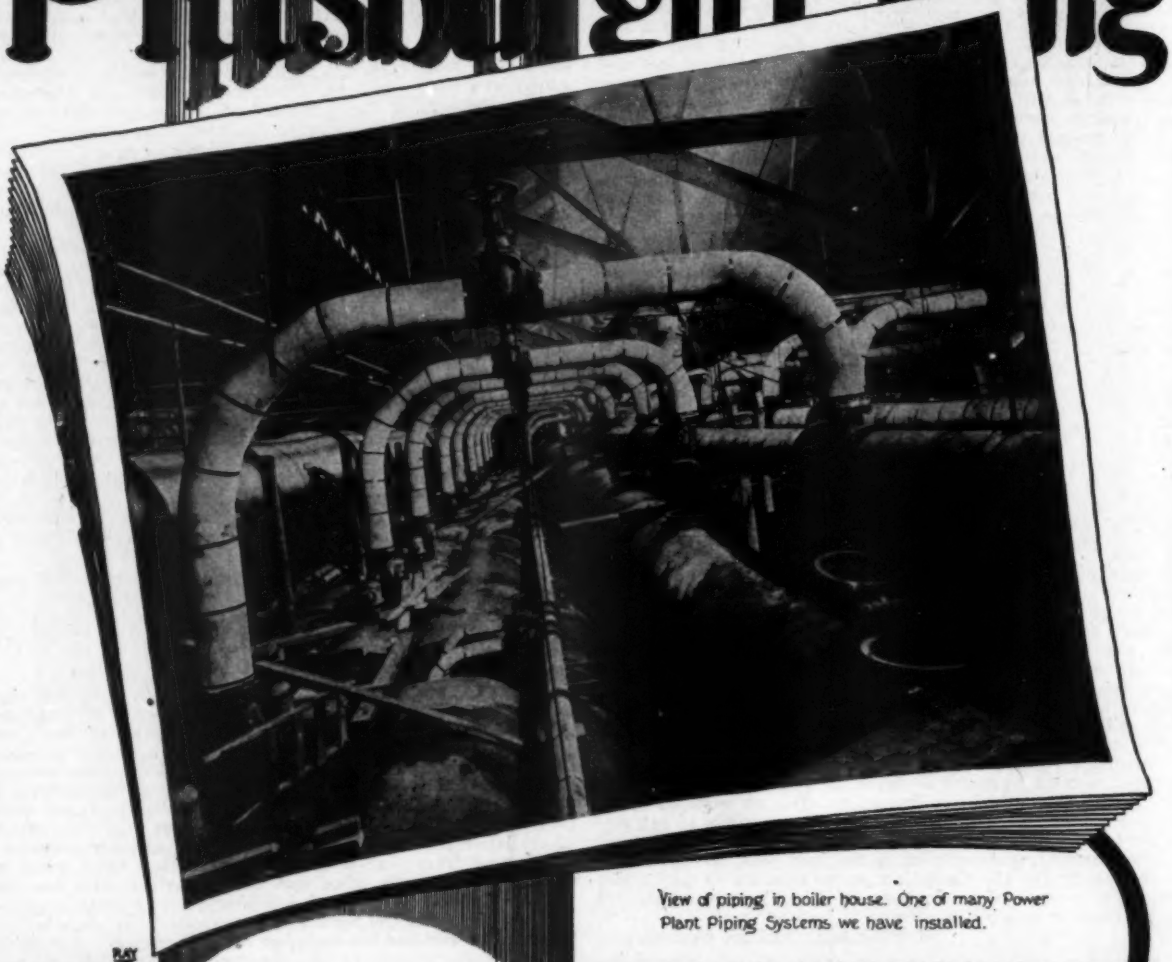

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adding to the cost of the wood. Unless we find the solution of this problem we are going to face extreme woods costs before many years have passed. The solution that suggests itself is increased immigration. We require in this country a certain percentage of floating population. In the winter we need more help for the woods, in the summer we need more help on the farms; in short, Canada needs more "hewers of wood and drawers of water." A type of immigrant who could be utilized for both these purposes would be of real benefit to this country and I believe that this Association would do well to appoint a committee to discuss this problem with the new Minister of Immigration at the earliest opportunity.

It might be argued that immigrants of the type suggested might rob the settlers, and particularly the French-Canadian settlers, of their birthright, for it cannot be denied that the French-Canadian is peculiarly fitted and adapted to work in the woods, but it will also be agreed that the French-Canadian is equally adaptable to mill work. He is quick to learn and a steady worker, two very necessary qualities for a worker in a manufacturing plant. However, he is more likely to choose to work in the mill which is near his home than to work in the woods which entails long separation from his own fireside.

The enormous increase in the development of our water powers now taking place is bound to result in the establishment of other manufactures in addition to pulp and paper, and they will all tend to diminish the available supply of Canadian-born woodsmen. In my opinion the time has come for us to study this situation and endeavor to find a remedy.

F. W. Clarke, Chairman.

TRANSPORTATION DEPARTMENT

Perhaps the most important transportation development which we have seen during the past year has been the amalgamation into one system of the old Grand Trunk and Canadian Northern, along with other lines previously owned and operated by the Government. The co-ordination has been gradually taking place and different activities consolidated and placed in control of central officers.

So far as freight rates are concerned the consolidation should have the effect of bringing about a reduction in cases where shipments have formerly moved over two or more lines, for instance, between points on the old Canadian Northern and points on the old Grand Trunk; between points on the old Canadian Northern and points on the old Intercolonial; between points on the old Intercolonial and points on the old Grank Trunk.

It is likely that our industries have been in the past and are at the present time, receiving shipments of raw materials, and are paying the same rates as they were under the old different managements; and if so, where it is felt that such rates are too high, the present would be an opportune time to place the matter before the proper officials in an effort to obtain relief. If this department can be of any assistance it will be gladly rendered on receiving particulars as to shipping points, destinations, etc.

It has been previously reported that the Canadian Railways have in course of preparation a new Canadian freight classification known as No. 17, and since the last annual meeting negotiations were conducted between this department and a committee of our members with the classification committee of the railways, and arrangements which were considered favorable to us were promised by the railways to be incorporated in the new publication. There are one or two minor matters affecting our members which still have to be adjusted but which are being attended to, and it is hoped will be finally settled to our satisfaction before the new classification takes effect, which will not be for at least two or three months.

At the present time there is before the Board of Railway Commissioners an application from the Express Traffic Association of Canada for a general increase. While our members are not as largely interested in express rates as in freight rates, nevertheless steps are being taken, along with a number of other organizations, to oppose this increase.

The question of transcontinental freight rates has been largely discussed during the past year, and at present the department has up, at the request of several of our members, one or two matters affecting this movement.

All of which is respectfully submitted.

G. T. RUICKBIE,
Manager, Transportation Department.

The Place of the Technical Men in the Paper Industry*

By GEORGE CHAHOON, JR.
Pres. and Mgr., Laurentide Co., Ltd.

WHEN it was suggested to me that you men of the Technical Section of the Canadian Pulp and Paper Association might like to hear from me, as one of the large operators, how I feel about the technically trained man, his use and future position in the industry, I rose as a trout to a fly with the thought that here was a subject I had lived with for years and should be in a position to discuss intelligently; and I felt as do all of the older men, that if I could contribute anything to the encouragement or peace of mind of the younger men who are to follow as heads of the different units of the industry, it would indeed give me pleasure.

When I came home and started to outline what I wished to say to you men, and endeavored to define a technically trained man, his use to the industry, and his possibilities, I found that there were as many efficiency experts developed as there are technical experts, but finally concluded that if you men were content to confine your activities to the limitations set by the common and general ideas of the technical expert, your place under the sun would always be limited and you would never be able to develop this great industry, or to assume the responsibility of its future management.

I believe I am right in saying that the business world views the technically trained man as a specialist and scientist who looks with intolerance at the so-called practical side of life, a man who has replaced the rule of thumb methods with a more accurate slide rule, and is prone to disregard the intangible and human elements of business. Fearing that I would have to be away at the time of the meeting, I asked Mr. Sabbaton to share the pleasures of this paper, which had grown into a responsibility, and collaborate with me in getting some message from the industry to give you men that would convince you that if the so-called purely practical man has put you in a corner in the past, and confined your scope of activities to those of the scientist and specialist, and you are content to remain as such, the responsibility is entirely yours, because we feel that with the advantages of your education and training, you start your business career more than a lap ahead of your untrained rival, and if you can confine your slide rule and other instruments to the purpose for which they were intended and develop the human characteristics of business, you will soon develop the vision necessary to assume larger responsibilities.

Not wishing to confine this message to our own experiences and ideas, and wanting to make the discussion as interesting as possible, we wrote six prominent men in the industry, sending them the same memorandum which was sent to us, and asked them if it had been their privilege to write this paper and start this discussion, how they would go about it. In this group we had the president of a company, a general manager, an operating manager, a prominent engineer, a mill superintendent and an accountant. I dare say if I had made a resumé of the six replies you would have had a more interesting answer to the question sent us than this will be. Surely we would have had food for a more interesting discussion, but I prefer to retain the responsibility, thanking our friends, however, for the liberties we have taken in cribbing freely from their arguments.

In discussing such a question as "The Place of the Technical Men in the Paper Industry," much unnecessary misunderstanding will be avoided by endeavoring first to determine, as accurately as may be, just what is meant by the term "technical man." Probably the most widely accepted idea of a "technical man" is one who has been graduated from some reputable school, college or university in which degrees are conferred upon those who complete the prescribed course

*Address delivered at meeting of the Technical Section, Canadian Pulp and Paper Association, Montreal, Jan. 23, 1924.

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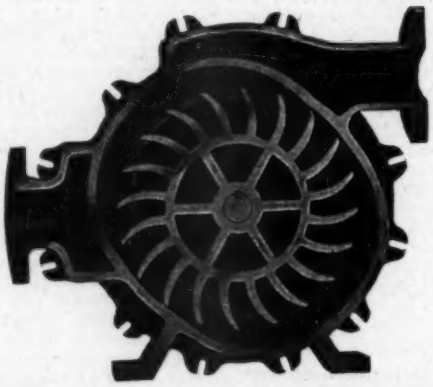

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of study, those degrees bearing such names as Electrical Engineer, Mechanical Engineer, Civil Engineer, etc., etc.

Obviously these technical schools must vary greatly in the subject taught and the length to which such subjects are pursued.

At one end of the line we have the school which does not profess to award any engineering degree whatever, but rather takes young men and endeavors to train them for high grade manual professions, while at the same time developing their minds through mathematics, physics, chemistry, etc., with the idea of broadening their outlook so they may become leaders in the particular profession that they have decided to pursue.

At the other end we come to the university in which facilities may be found for specialized study along most any line for those who may desire to develop themselves into what may be termed "pure scientists." Between these two extremes may be found schools of all grades, each endeavoring, as best it may, to train young men along the generally accepted lines of study that are supposed to lead to success in any or all branches of the engineering profession.

Having glanced thus briefly at the opportunities for acquiring technical knowledge, let us now consider for a moment the quality of the raw material, in the shape of students, with which these schools, colleges and universities are forced to work, and from which they are asked to develop for the benefit of the industry in particular and the world at large in general, a high grade of technical man and who will lead civilization forward to better things.

First, whether we like the idea or not, we will all probably have to admit that wide variations in mental ability do occur between boys who are apparently in all respects healthy and have been given equal opportunities for learning during their days of primary education. The standards of entrance examinations in many of the technical schools are quite low, as they are well justified in being, and as a consequence, the first year or two of technical school courses are filled with boys who have not the requisite mental ability, or perhaps the desire to study, as will probably enable them to complete the course. In spite of this, many that we might almost call "mentally unfit" do stick to it and complete the required work, perhaps with a year or two of extra study, thus, in a way, forcing the school to confer upon them a degree of engineering. In fact, from the point of view of natural aptitude or ability, a certain proportion of the men who thus force their way through and are turned out as qualified engineers might, with much better effect, have spent their time in training themselves to become artists who might have added to the joy and beauty of the world, or hod carriers who would, at least, have added something in the line of manual labor.

It is, thus, easily conceivable that a particularly brilliant young man who had studied at one of the manual training schools, where no recognized degree is conferred, might become at the end of his period of training, a much more valuable man for a manufacturing concern than the man having the average mentality of the graduates from the best of the universities.

Again, pressing this train of thought a bit further, we are all undoubtedly acquainted with individual instances of men who make no claims whatever to a more advanced education than is afforded by the regular high schools, but who have become interested in some particular line of work, and who have, by general reading and information, picked up in various ways, arrived at a state of knowledge and ability that puts the average technical graduate to shame.

We are thus driven to the conclusion that so far as the men receiving degrees from technical schools are concerned, they may be put into three classes, good, bad and indifferent, with perhaps a very small fourth class who are the "very good" and who do not have to seek a place in the paper industry or any other industry, but for whose advice and ability the various industries compete with one another.

Due to these general considerations it would seem apparent that at least a portion of the men who carry the letters of a technical degree after their names are probably not well equipped to promote the high calling of the engineering profession, while, on the other hand, at least a few self-made, or self-educated men have all the requisites to entitle them to be placed under the name of a technical man.

Engineering Defined

Treadgold defines engineering as "the art of organizing and directing men, and of controlling the forces and materials of nature for the benefit of the human race." This is a decidedly broad and comprehensive definition, and a few moments taken in considering it may not be time wasted. Please notice that the ability to organize and control men is put ahead of the ability to control the forces and materials of nature. It is unfortunate that the curriculum of the standard engineering schools lays so much stress upon the study of mathematics, physics and other natural sciences as to almost exclude the possibility of a proper amount of time being devoted to economics, history, the science of government and many other subjects which deal directly with the human factors in industry and life in general. As a consequence of this many young men who are graduate engineers start their careers with only one-half, and perhaps the least important half, of the proper mental equipment, provided they intend to use the definition of Treadgold as the basis of their life's work.

To this fact alone may be ascribed the basic reason why so many technical men who are undoubted leaders in their particular branch of the engineering profession fail to work themselves into posts for which industry is willing and justified in paying the largest salaries, and to it may also be put down the reason that they are so often unable to convince the "practical man" that their ideas and theories are those which are sure to bring about the results that may be desired. A little poem clipped from a recent number of the Canadian Pulp and Paper Magazine illustrates this point in a way that is easy for all paper manufacturers to appreciate.

Where That Break Came From

That's Test Tube's place, behind that door;
What the devil'd the old man get him for?
Can't see what he's doin',
A-boilin' and stewin'—
Never needed him afore.

Backtender Jack the other day
(Old Number Four was makin' hay)
Gives Test Tube a whistle,
And hands him a bristle,
An' the oiler heard him say:

"What kind o' wood they cookin' now?"
Backtender pulled a solemn brow.
"I'll see, in a minute,
Exactly what's in it—
I'll run in and look at it now."

Test Tube, he looks so very wise,
With horn rims set in front of his eyes,
An' him never smilin'—
Pat Flynn wuz 'ilin'—
Just tips off some of the guys.

In half an hour Test Tube comes back,
Just walks right out of that corner shack.
All the crew in the know
Just watched him go
And hand a blue paper to Jack.

And walk away. Jack gives a wink
An' opens it—'twas writ in ink.
"I'll bet," says Flynn,
"Jack's been took in!
He looks some sold, I think."

Jack crumpled it up and threw it away,
Broke hustler, he salvaged it out of the hay,
An' gave it to Pat,
Who spread it out flat,
And we read it right where it lay.

"I beg to report," Test Tube, he said,
"The foreign fiber's from somebody's head.
The stock is quite good
From the rest of the wood.
Wear a hat, then the trouble won't spread."

H. TUESS.

It should be noted that these verses not only show up the weakness of Old Test Tube, but in a still more marked degree the narrow mindedness of Backtender Jack; but the truly important fact that is brought out is that the two men do not understand one another's point of view, and it would seem that Test Tube with his superior chances of education and development should be the one to make the advances and to have a sufficient amount of tact and ability, not only to persuade the Backtender that his methods are worth something, but more important still, to approach him as a man to man, obtain his confidence and get his hearty co-operation.

In connection with this same question as to the lack of proper understanding of the human element in the problems that confront the Technical Man, let me read to you a newspaper clipping that came as a contribution to the general

"Our Troubles Commenced"

WHEN the Paper Machine Builders removed the shake from the modern fast News Machine. High Speed and scoring suction boxes put the "kibosh" on Wires Seams. However, the burning of a little Midnight Oil and the stirring up of the Grey Matter both on the part of the Wire Manufacturer and the Mill Organization solved the problem and we now have that "Night Mare" "nailed to the Mast."

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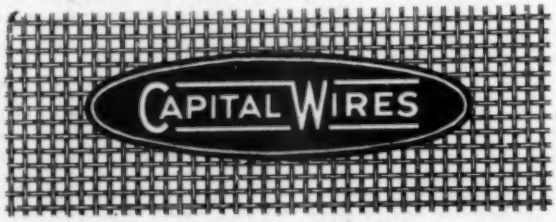

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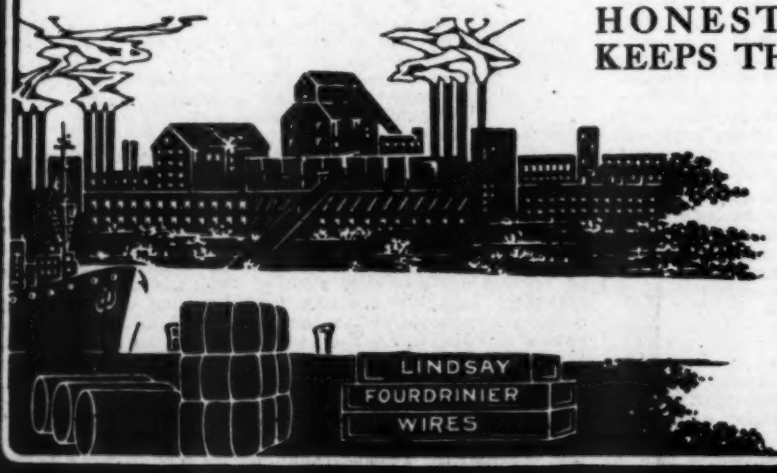

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College "Mixers" Earn Most Afterward
Reports from Michigan, '12, Shows Phi Beta Kappa Men Prosper Least Pecuniarily.

(Special to the New York Times.)

Ann Arbor, Michigan, December 14. It profits a man little in dollars and cents to work for "A" grades at college unless he also possesses the ability to "mix" well with his fellows, it is revealed in statistics collected by Adelbert Ford, instructor in psychology at the University of Michigan.

Phi Beta Kappa men have acquired an average income of $3,000.00 a year during a ten-year period since graduation, and those who gained prominence in college for their social and campus activities have acquired incomes averaging more than $10,000.00 in the same time.

The statistics at Mr. Ford's disposal were gathered from 98 of the 257 men graduates of the class of 1922.

Men of Michigamau, the highest campus honorary society, which makes its elections for social prominence and activity, now are drawing yearly incomes of more than $10,000.00.

Men of Sphinz, chosen for practically the same accomplishments, exhibited in a minor degree, earn more than $8,000.00 annually. All "M" athletes earn $6,400.00, the average student gets $5,800.00 a year and the Phi Beta Kappa men $3,000.00 a year.

From that group of campus politicians and social leaders included in the first high salaried group, two are getting $18,000.00 a year as bank presidents and one is a stock salesman at $16,000.00 yearly.

Next in line of income are lawyers, who average $7,500.00; doctors with $6,500.00, and then the merchants with incomes around the $5,000.00 mark. Earning less than the merchants are the other professional groups, chemists and other scientists, and teachers. One individual admitted that with all his college training he was able to earn only $1,200.00 a year as an iron molder.

"The statistics do not prove that the men of the high grades are incapable of earning big money. They merely show that they do not prefer those lines which are most lucrative," said Mr. Ford.

"The Phi Beta Kappa key marks its wearer for the scientific or teaching profession. He is sought out among all his fellow students, by teachers and scientists to carry on the work, which already has been started by others who possessed his ability in previous tests. Once in the work of research, it is difficult for a man to change his course.

"I divided men into the social and non-social groups in this compilation, to learn, if possible, whether that ability to mix socially in college life were not the characteristic which most successful business men possess. It is shown quite conclusively to be the fact. Those students who are forced on by their desires to enter college social battles and political struggles are the ones who mix well in later life and win the financial rewards."

It may, of course, be argued with considerable force that these statistics prove nothing except the fact that men of the studious type of mind, who go in for honors at college, are apt to become so engrossed with their mental viewpoint that they neglect their social obligations and enjoyments and that this habit follows them after their college days are finished. On the other hand, if the man with exceptional mental capacity, or with more than the average amount of knowledge in any particular subject, is going to make this capacity or knowledge of the greatest use to himself and humanity, he must be able to procure for himself a position in industry which is recognized as being one of authority, for if he is unable to work himself into such a position, some one else is going to boss him and obtrude their ideas upon him rather than allow him to give full rein to his own ability. It would, unfortunately, appear that these places of authority instead of going to the specialist are being given by industry to the men who are better able to produce a good social impression upon the men with whom they come in contact, or who are always ready to cheerfully put out the glad hand.

Does this not prove pretty conclusively that, in order to be truly successful, the technical man must be something more than a technical man in order that his light may not be "hid under a bushel"?

In pursuing Treadgold's definition a little further, it will be noticed that the directing of men and the controlling forces of nature are to be done, not for the financial benefit of the engineer himself, nor yet for the sake of obtaining the maximum amount of profit for the individual or company by whom the engineer may be employed, but rather for the benefit of the human race. This may perhaps sound a bit too altruistic to suit the ideas of the hard headed business man or the struggling engineer who may be trying to support a family, but nevertheless, to obtain the greatest measure of real success, this is undoubtedly the proper formula to be followed, and the goal towards which both the corporation itself and the individuals making up the organization of the corporation should aim.

The characteristics of the average technical man, as they are developed by his training, the study of mathematics and allied subjects, produce in him the ability to think logically and exactly. This tends to make him exact in his statements, his measurements and in all departments of his work, honest with himself and his fellow men, systematic in a greater or lesser degree, and perhaps efficient—if this term efficient is not used in its broadest sense. The technical man will invariably use deductive reasoning. He wants to know the facts of the case, all the facts, and to be sure whether they truly are facts or not; like the man from Missouri, he must be shown. After he has gotten these together he applies his method of reasoning, and will produce an answer that at least satisfies him as being the correct answer. In other words, he refuses to work on a hunch. In certain limited cases, this method works to perfection and gives results that are in every way satisfactory. When, however, a large problem is presented, a problem of perhaps vital importance to an industry, so many unknowns and variables are injected into the discussion that this method of reasoning fails to work, and the man who has, perhaps, a grasp on the psychology of market conditions, the tendencies of finance, political conditions that obtain or are likely to obtain, or any one of a dozen other factors that are usually omitted from the findings of the engineer, is able to come forward with a solution of the problem which may almost be said to be based on guesswork, but which on careful examination is found to rest on fundamental principles that govern industry in its relations with human nature.

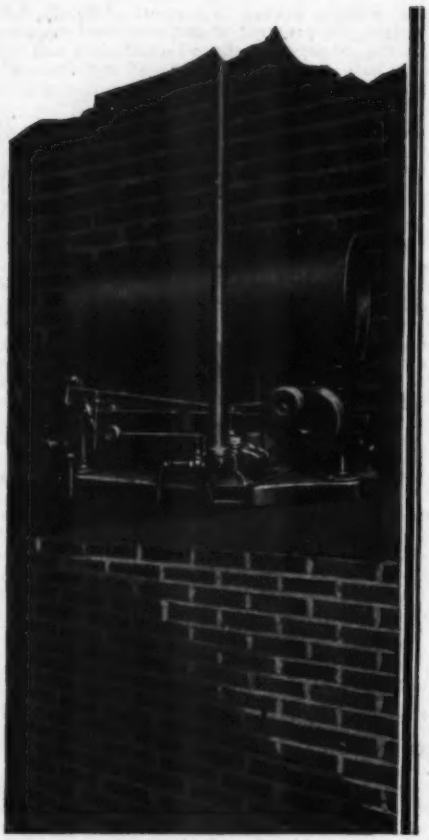
Great Possibilities for Technical Men

In considering what you technical men can do for the industry, it seems to me that we are flooded with possibilities. The surface of the so-called operating department has barely been scratched. As an instance, the process of making sulphite pulp was developed more than thirty years ago, and practically nothing has been done to refine the crude and wasteful methods of the inventor. Ventilation, steam consumption and power economies are all fertile fields for your endeavors. These are possibilities within your acknowledged sphere. The practical man cannot be holding you back in making such economies, because if he was he would cease to be practical and be put in the discard by the owners of the properties.

The big question, however, before this and all other industries, and before us all, is: Who is the man that is going to develop himself capable of solving the large fundamental problems that really govern the success of business? With us these problems are: First, finance, real or imaginary; conservation of our natural resources; the development of markets; location of plants with regard to sufficient economical supplies of wood, power and proper transportations; and perhaps last, but not least, the relation of business and labor. Water seeks its own level. The men who have most successfully handled these large problems in the past have been men who by training or natural instincts have developed a wide vision, the ability to think clearly and accurately, and to command the confidence of their fellow men.

Mr. Beatty, President of the Canadian Pacific Railway, by training has a legal mind. When Mr. Harriman died, the responsibilities of the Union Pacific Railway were placed in the hands of Judge Lovett. The United States Steel Corporation has Judge Gary at its head. These men certainly have not acquired these honors and responsibilities because they are lawyers and, therefore, can keep their companies out of mischief. No, because they are trained both technically and practically, because they have vision to see, power to act, and character that begets confidence.

In summing up these questions it seems to me that the true and accurate answer rests entirely with you men. How to succeed in business or in life never will be taught in college or in school. You leave your college or school, supposedly well groomed to enter this everlasting race for success. If you fall by the wayside it will not be through faulty training, but will more likely be from your own lack of appreciation of what you can do for the industry you are attempting to serve, and your inability to command recognition for services performed. Opportunity awaits us all. Sufficient ability, character and will, will enable you to grasp it. Your technical training in this or in any other work gives you a distinct advantage. May this advantage be sufficient for your success. I certainly hope so; if not, what is the use?



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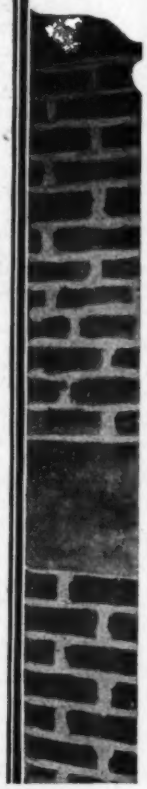

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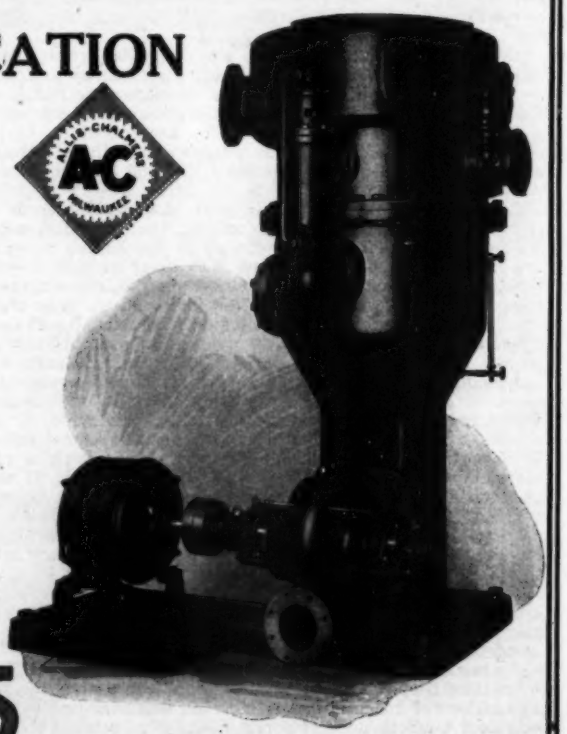

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Tom Harvey Addresses Superintendents

The following is an address given by Mr. Tom Harvey, manager of the Gardner-Harvey Paper Co., Middletown, Ohio, before the Superintendents' Meeting at Kalamazoo, Mich., January 17, 1924.

I AM a lover of paper-making and I love the men who work at the trade. My father and grandfather before me and all my uncles and a brother were all paper-makers. I was born in a paper mill yard, and I have never been very far from one since.

What I don't know about paper-making would fill a very large book, but I would like to talk to you this evening on "What we may best do to make ourselves more valuable to the people we work for."

Some men grow with responsibility, other men just swell up and burst. What kind are you? Now you foremen being here tonight is proof in itself that you are men of initiative, with a definite desire to advance up the ladder of success, and that desire in itself stamps you as "worth-while" men. You would, in all probability, be smoking a cheap cigar down in a pool room, or leading a conversation somewhere telling your hearers how hard you work and how little pay you get for it, and trying to organize them for a strike. The fact that you are leaders of men proves that you have tried to do as much as you could for the money you have received, and also proves that you have had some education. It matters not where you received it; whether you got your diploma from some grade school, high school or college, or whether you have graduated from that college that gives no diploma—the college of "hard knocks," for all education is not received from the study of books.

I have read a number of papers from college efficiency men trying to give advice on how to handle men to get efficiency, but I want to tell you right here, that no man has any business talking about how to handle working men or give them advice until he himself has worn overalls and sweat with them; fought with them for their rights, and knows from actual hard-earned experience what the working man is really up against and how to sympathize with him.

A paper maker, to be successful, has to have a very active brain and has to be capable of making quick decisions. He has to act as well as think quickly, for sometimes quick action will save hundreds of dollars for the company. He has to be a man with much horse sense.

Secret of Success

I have read hundreds of articles on how to be successful and most of them will tell you that hard work is the key to success, but that does not tell the story at all. I have known men who have worked steadily for 25 years without losing a day and have been saving and temperate in their habits, and are not only broke but utter failures today. They are grouches; have worked because they had to work to live, but not because they considered work one of the greatest gifts of God. A grouch is a failure yesterday, today and forever. I pity every one of you who look on work as toil. Those of you who do, will never advance any further than you already have. The law of human nature will keep you right where you are. I am not theorizing; I do not want to appear egotistic, but I am going to give you the only true key to success, and that is—no man can succeed unless he first learns to love the job he has in hand. Play it with the same energy you would a game of foot ball. The love of work immediately puts enthusiasm into everything you do. The ability to learn to love work is the key to the jewel box of success.

I have met a great many captains of industry, and in my youth I pictured these men as being abnormally great; men of superior ability and brain, but I am frank to tell you that I have no such cobwebs in my brain now. It did not take me long to realize why these men were big and successful. Without any exception, every great captain of industry and successful business men that I know are men who are wrapt up heart, body and soul in their work. They do not work for the dollars that are in it. They stay at it from early morning until late at night because they love it, so if you want to be successful and be more valuable to the people who employ you, remember you have just as good a brain as the man above you with the careful elimination of "grouch" and the spirit of knocking, you will get there. "All the world loves a lover" and when you have learned to love your job, you will have dispersed the clouds which have been withholding from you the sunlight of happiness and greater success.

About 90 percent of foremen have, I think, come up from the ranks. They have worked at the job they are now superintending. They should know what their men can do and what they cannot do, and I feel that the future development of our plants and the development of better quality and higher production is going to be accomplished through our foremen, and I will tell you why; foremen are going to recognize the necessity of a spirit in industry. The efficiency of a man is either raised or lowered from 15 to 50 degrees by his mental attitude toward the job and his mental attitude toward the foreman he is working under, therefore the foreman having practical experience is going to learn to pull every ounce of spirit out of his men by becoming thoroughly familiar with their peculiarities.

The foreman is the "Key" man in the industry; he is the point of contact between men and management. He seldom has more than 25 men under him and there is absolutely nothing to prevent him from thoroughly understanding the make-up of every man in his crew. He should know their likes and dislikes and their family life. Many a poor fellow is not able to do a fair day's work because of the conditions in the home; a sick wife or a sick child it may be. You should sell yourself to your men so that they will feel perfectly free to talk over their troubles with you, feeling sure that you will listen with a sympathetic ear, and the man who has not a pleasing personality and a feeling of respect and admiration for men as a whole, will find his job limited to a very small sphere. The foreman of the future will find that his ability to sell confidence, good-will and respect to men will be a lot bigger factor to bring an increased pay check and a position of authority than his ability to drive men for a short period of time.

Place Confidence in Your Foreman

Foremen of the future will have to be men who can keep down turnover. The biggest factor by far in eliminating turnover lies directly in the personality of the foreman. He must be able to create confidence in the men so that they will feel that in him they have a champion—a man who will see to it that they get a square deal. I have known a manager or superintendent to do more harm to the morale of the men in the mill in five mintes than a foreman could correct in five months. If you have a foreman working for you, have confidence in him and don't go over his head and give orders to his men. If the work is not being done to suit you, find the foreman and tell him and let him tell his men, for a foreman can have no control over his men if a third party keeps butting in.

To make yourself more valuable to the people you are working for, you should assume the reponsibility of your job. In other words, don't pass the buck. I have known managers who have, at the end of the year, nothing to show their stockholders in profit. They have put the blame on the poor superintendent and have discharged him in order to hold their own job.

The foreman's big job today in the industry is: keen observance of actual every day happenings on the job, picking out all the mistakes and building success from the mistakes of yesterday; but believe in men, have confidence in men and build men. Remember there are always three sides to every argument; your side, the other fellow's side and the right side. The spirit which you wish engendered in men can only be developed by you yourself, having your own spirit in the game. Enthusiastic loyalty to the company you work for is as necessary to successful leadership as salt is to the meal. if you are a grouch yourself, your crew will be grouchy. If you are only half-hearted in your method, that is all you are going to get from your workers.

Develop Successful Qualities

Some gangs of men are like a big eight cylinder automobile which is only hitting on four cylinders—they do not all pull together at the same time. To have a smooth running mill, the whole crew must work together, and you cannot expect an energetic, vigorous, hitting-on-all-cylinders crew, if you yourself are coughing along on four cylinders. It can be done. You are the battery that is furnishing current for the crew. If the battery is weak, you are not going to get much response. You cannot mix enthusiasm with suspicion. It is like oil and water. Neither can you mix good will and indifference, nor will arrogance and efficiency work together long. Whatever you do, put red blood into it. Take part in the

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town activities. Develop some personality. Develop fairness and tolerance, and when you have developed these you will have unconsciously developed the main spring that drives to permanent success—Principle. When that principle, which is the balance wheel of civilization, is thoroughly and permanently encased under your coat, you will be able to climb almost any ladder most any way, most any time, because those four qualities develop a fifth—Self Reliance, and with that combination nothing can stop you from reaching any goal you set out for.

Don't get discouraged. Real foremen must have patience. Tolerance will give you patience. Many of our best foremen have gone down and out because they got a little discouraged and then went out and tried to drown their troubles in drink. Red blood never gets discouraged; at least not very much, because a red blooded man keeps the past behind him and is building for the future. I do not care how dark the future may look or how limited you may think your opportunities are, keep hitting the ball. It is the discouraged man who can never see opportunity. The discouraged man can never instill faith in anyone else, nor can he win confidence. You are fighting men or you would not be foremen. You have initiative or you would not be here tonight. You have the quality to make sucessful men if you hit the ball and keep right on hitting it. Babe Ruth does not make a home run every time he goes to the plate. He fans once in a while the same as the other fellow does, but remember, when he fans he swings the bat just as hard as when he hits the ball for a home run.

All successful men have their dark days, but it is the troubles and disappointments that temper the real hard steel within us. Iron goes through fire and comes out steel if it is worked right. It goes back to softer iron if it is not worked right. Disappointments and discouragements are the fires of experience that temper the qualities in man, so if we would be of more value to mankind we should do the best we can to render service, for in this game of life "He profits most, who serves best."

What Is Sustained Yield?*

By B. T. AVERY

Spanish River Pulp & Paper Mills, Ltd.

FOR several years the Woodlands Section has met at about this time to discuss questions of mutual interest. Among other things, we have talked in an abstract way about sustained yield. I believe it is the chairman's purpose in introducing this subject for discussion now to arouse the interest of the Section in sustained yield, not as an abstract idea to be discussed at annual meetings and forgotten, but as a fact to be accomplished through determined, sustained effort, in order that the Canadian mills which we represent may continuously prosper.

In this introduction I shall purposely omit reference to formulas. I do not hope to tell you anything new. My desire is that we shall feel that continuous production is worth striving for on our own properties; that the benefits are worth the effort necessary to obtain them.

What is sustained yield? From the dictionary, sustained means kept up, or maintained—specifically, kept at one pitch; and yield means to furnish in return for labor; in general, to produce. Also from the dictionary, applied to forestry, yield is the amount of wood at present upon or which after a given time will be upon a given area. Prof. Recknagel defines sustained yield as the yield or cut of timber from a forest which is managed in such a way as to permit the continuous removal of an approximately equal volume of timber annually or periodically (equal to the increment).

There you have the meaning of the separate words, and the interpretation of the phrase when applied to forest lands.

The words have a pleasing sound, excepting perhaps those which read "to furnish in return for labor." Can it be that here is the sticking point and that we have been content to enjoy the sound of the words because the attainment of the fact meant hard work? It is not possible.

Whatever the reason, we have not accomplished in appreciable degree that which the definition implies.

To understand sustained yield, it is necessary to apply the principle first in imagination, and then in practice to some property with which one is familiar. The words must bring a vision of the steps to be taken in the application of the principle, the attainment of the desired goal, and the results of that attainment.

The principle is the same for all of us. The conditions which govern the steps to be taken are very probably different for each one. The action in applying the principle of continuous production to the property that each of us has visualized will vary, but a description of the course required in one case may help by comparison to clarify the course to pursue in others.

Let us take a tract of pulpwood-bearing land. Our policy is to operate this tract for sustained yield. What is the first thing to do? Find out what the tract has produced, how much available merchantable wood is on hand. This is the inventory, the stock-taking.

The next information needed is the time required to produce merchantable pulpwood from seed. Let us assume that this takes sixty years. It is evident that if we cut one-sixtieth of our stock each year, we shall have sustained the yield of our tract for sixty years. We have assumed "no fires" and "a sufficient annual cut to permit us to operate at average cost." That is a brave assumption, but let us try to avoid complications for the moment. We have cut equal quantities of wood annually for sixty years. But there is no time limit to sustained yield. What are we to do the sixty-first year? Now we must look at the area cut over the first season. We knew nothing about silviculture when we started. We cut all the pulpwood trees to 6 inches diameter on the stump. However, we had power of observation, and made a record of the fact that on cutting area No. 1, a certain number of acres had pulpwood trees from three to six inches in diameter standing in sufficient density to make a second cut possible when they became merchantable. We discovered by chopping into some sample trees a few years later that our stand on cut-over land was growing at the rate of, let us say, one inch in ten years. In sixty years the three-inch trees would be nine inches and the five-inch trees would be eleven inches in diameter.

Our record thus far has consisted of "inventory of stock," "merchantable age," and "amount of advance growth on cut-over areas." If this record of advance growth shows that at the end of sixty years cutting area No. 1 will produce a cut equal to the original harvest, we are safe for the sixty-first year, and we have sustained the yield at a given pitch. If this is true of all the cutting areas, we are safe for one hundred and twenty years.

But what of the one hundred and twenty-first year? We must turn again to cutting area No. 1. We shall have kept this area under observation during the first years of our program, and shall have discovered whether or not our system of cutting has resulted in keeping the forest in a condition favorable to reproduction. If reproduction, in sufficient density, has been obtained naturally, we shall have trees ready to be cut in the one hundred and twenty-first year. If our method of cutting has created a condition preventing reproduction of the desirable species, we shall have to do one of two things: regulate our cutting system so as to obtain reproduction, or strengthen the stand by planting.

Self-Sustaining Through Natural Reproduction

We may suppose that during the first thirty years of our program we shall have discovered a method of cutting that will result in natural reproduction. On certain types, the solution is not a difficult one. On others, it is most difficult. If we have discovered the means of getting natural reproduction, our unit will have become self-sustaining. The steps we have taken are as follows:

1. Inventory of stock.
2. Discovery of merchantable age.
3. Regeneration of that portion of cut-over areas suitable for growing pulpwood in sixty years by regulation of cut, or by planting.
4. Recording advance growth on cut-over areas.

We have visualized a unit on which the percentage of pulpwood bearing type is sufficient if kept fully stocked to sustain the original yield. If the percentage of hardwood lands is high, the cut of the first sixty years will have to be reduced during the second sixty years. If hardwoods can be marketed at a profit, and the land freed for pulpwood production, we may be able to sustain our original annual cut. It would not be wise to expect at this time that we could convert hardwood bearing areas into softwood type. We may not have been able to keep the yield at a given pitch, but we have given nature an opportunity to make our unit continuously productive.

But how does this method differ from our present practice? It is chiefly different in the point of view, in the attitude of the operator. Why not cut the unit in five years and then move to another watershed and cut the merchantable timber on it, and so on, so long as we cut one-sixtieth, if that is the length of the rotation, of the merchantable stock in one year? Why keep several headquarters? Because I do not

*Delivered at the meeting of the Woodlands Section, Canadian Pulp & Paper Association, Montreal, January 24, 1924.

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believe that it is possible to build up the attitude toward the forest that is essential for constructive management, except by unit organization. To attain continuous production from a given area, it is necessary that the operator experience a sense of ownership, a sense of responsibility for the condition of the unit under his supervision. Through the establishment of permanent operating units, it is possible to build up an *esprit de corps*, which will give an opportunity for the attainment of the desired result.

Visualize a watershed that you know, one that can be operated naturally as a unit and that possibly can yield a sufficient annual cut, throughout the time required to grow trees from seed, to permit you to operate it annually. Put in charge of it some man with operating ability, who has the capacity to appreciate the benefits of permanent operations. Each of us knows several such men in our organizations today. Give him an opportunity to "farm" the unit. What have we reason to suppose would be the result? Would he not in the first place do everything in his power to protect it from fire? Would he not try and gather into his organization men of the same point of view as himself, "forest farmers"?

Would he not, in his plan of improvements, avoid many of the mistakes which we now make because our improvements are constructed for temporary use? Would he not know more about the unit and means required to make it self-sustaining than is possible for any of us to know today? Would he not actually bring about sustained yield on the unit if under the conditions it can possibly be attained? I believe he would. We cannot bring about a desired condition through wishing that condition to exist. We can increase our chances of reaching a desired goal by clearing the way of obstacles and thereby opening an opportunity for those conditions to arise which will be most favorable to the attainment of our desires. Through inventory of wood capital, discovery of merchanable age, the annual cutting of an equal quantity of wood and operating by a permanent unit organization, we shall furnish the best opportunity for the attainment of a cut of timber of an approximately equal volume annually from our forest.

The principle of sustained yield is not a filmy thing of which dreams are made. It is the basic block in the structure of a permanent wood-using industry. It is not a thing to be discussed in a class room, in an office, at annual meetings, and forgotten. Sustained yield means permanent woods operations, forest protection, regeneration of cut-over lands, permanent improvement, permanent employment, homes in the forest, and permanent mill operations. Every step taken toward sustained yield means a step away from temporary woods operations, from irresponsibility in forest protection, from disregard for advance growth and reproduction, from temporary tote roads, camps and river improvements, from temporary employment and resulting inefficient labor, from shifting headquarters, from an unsound foundation of industry.

No one can tell us how to sustain the yield on our own property so well as our own organization. Let us forget formulas. Let us study our units through our operating organization and give it an opportunity to display a constructive attitude toward the forest.

We need not be discouraged because we cannot make over our properties in a year. Nature works slowly. Her latest invention was colored flowers, and she accomplished those 6,000 years ago. We, in attempting to help nature bring about a desired condition, must realize that, because nature prefers evolution to revolution, we can be of greatest assistance through giving natural laws an opportunity to work. Through operating for permanent woods operations by means of unit organization, I believe we shall discover what sustained yield is.

Recent Developments in the Use of Canadian Fuels*

By B. F. HAANEL

Mines Branch, Department of the Interior, Ottawa

THE serious fuel shortages which occurred in 1918 and again in 1922 served to direct public attention to the unfortunate position occupied by the central provinces of the Dominion regarding an assured supply of coal suitable for domestic purposes, and to point out the necessity for rendering this area less dependent or altogether independent.

The realization of the gravity of the situation which would exist if foreign exports of coal were entirely cut off, led to the appointment of Parliamentary Fuel Committees and the Dominion Fuel Board. The latter was empowered by Order-in-Council to conduct investigations with a view to finding a solution or solutions of the existing fuel problem. The Dominion Fuel Board has now been functioning for very nearly a year and has underway several important investigations which it is likely will result in the improvement of the fuel situation in central Canada. But, while this body has been able to indicate possible partial solutions of the problem, it has been unable as yet to show how this portion of Canada can be rendered wholly independent of imported coals.

As has been frequently stated in various papers and reports, which have been prepared by the Dominion Fuel Board, the only section of the Dominion which really would suffer acutely, if imported coals were altogether cut off, is that comprising the provinces of Ontario and Quebec, and this section has been aptly termed "The Acute Fuel Area." It is with the exception of Quebec, almost wholly dependent on the United States or other foreign sources for its fuel supply, not only for domestic, but also for industrial purposes, and it is, therefore, chiefly with this area that the Dominion Fuel Board and the principal investigations which it has undertaken is concerned.

The fuel shortage which occurred in 1918 also had the effect of inducing the Federal Government, in association with the governments of Saskatchewan and Manitoba, to create the Lignite Utilization Board, and in association with the government of Ontario to create a Joint Peat Committee for the purpose of conducting special investigations relating to the conversion of the lower grade fuels, lignite and peat, into a product suitable for domestic purposes. The Peat Committee recently completed its work and has issued a favorable interim report.

The subject of this paper, "Recent Developments in the Use of Canadian Fuels," rather limits the writer regarding information concerning fuels which might be placed before the Association. Such a title would be very appropriate for a paper on fuels written for a European or United States technical association, since the larger amount of fuel research work is naturally carried on in these countries which are densely populated and highly industrialized. The necessity for utilizing fuels in the most efficient manner in such countries is manifest, but in a country like Canada, which covers a wide stretch of territory and which, comparatively speaking, is sparsely populated, and yet at the same time possesses enormous quantities of fuel, the necessity for practising the most efficient methods is not so apparent.

This applies to Canada as a whole, but unfortunately, the most thickly populated portion of Canada, and at the same time the most highly industrialized, lies within the "Acute Fuel Area" and in this area a real need for the introduction of efficient methods for the utilization of fuels and the practice of rigid economies actually exists.

The dependence of this area on foreign sources of fuel is not so apparent in connection with industrial fuels as it is with fuels for domestic purposes, since the fuel almost wholly used for the latter is American anthracite, and the price of this coal is steadily advancing, its quality deteriorating and its annual production scarcely keeping pace with the demand, and moreover, its export may at any time be entirely cut off. This is not the case with the industrial fuels, such as, coking coals, gas coals and steam raising coals. These can be obtained in large quantities from the United States and at comparatively low prices. Moreover, the absence of supplies of native industrial coals in Ontario and Quebec is mitigated to a large extent—so far as power requirements is concerned—by the large hydro-electric development which now makes possible the delivery of large quantities of energy equivalent on a heat unit basis to several million tons of coal.

The problem, therefore, narrows down practically to that of assuring a continuous suppy of fuels for domestic purposes, and it is in this connection that the more important research work has been conducted with a view to devising processes for converting the lower grade fuels into a product suitable for domestic purposes, and also to convert the higher grade bituminous coals into an acceptable domestic fuel.

Recent developments in the use of fuels which will be discussed, pertain to the manufacture or preparation of coals—in their raw state unsuitable for domestic purposes—into a satisfactory product and the substitution of Canadian coals for industrial and domestic purposes. They may be enumerated as follows:

1—The elimination of anthracite coal, and to a certain extent American bituminous coal, in Manitoba, by the capture of this market by Alberta coal operators.
2—The regaining by Nova Scotia coal operators of the pre-war St. Lawrence market.
3—The successful development of machinery for manufacturing peat fuel according to the air-dried-machine-peat process.

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* Read before the Technical Section, Canadian Pulp and Paper Association, Montreal, Jan. 23-24, 1924.

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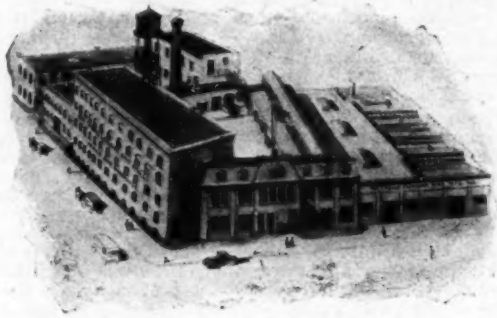

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4—The proposed introduction of pulverized fuel in a central heating plant at Winnipeg and in a power plant in Ontario.
5—The development of a process for converting low grade Saskatchewan lignites into a high grade domestic fuel, by means of carbonizing and briquetting.
6—The erection at Walkerville of a plant by Henry Ford for treating bituminous coal according to a new and novel low temperature carbonization process.
7—The introduction of by-product coke as a domestic fuel in place of anthracite.

1.—Prior to the war, and for a few years thereafter, the province of Manitoba used imported anthracite almost exclusively for domestic purposes and imported bituminous coal for industrial purposes. The efforts made by Alberta coal operators to introduce Alberta coals into Manitoba for domestic purposes, especially, have met with complete success. Manitoba today imports but a very small portion of her total domestic fuel requirements from the United States, and it appears that Alberta bituminous coals are also being successfully introduced for industrial purposes. The coals which Alberta supplies to Manitoba for domestic purposes are the high grade lignites found in the Drumheller and Lethbridge districts. These lignites when shipped have a moisture content of approximately 10 or 15 per cent and a comparatively low ash content and a heating value in the vicinity of 10,500 B.T.U. per pound. The deterioration of the coal is not excessive in transit when the haul is short, but for long hauls it is advisable to ship the coal in box cars.

Efforts to introduce Alberta coal for domestic purposes into the province of Ontario, have not met with success on account of the high cost of hauling from mine to destination. The greatly reduced special rate in train load lots which the president of the Canadian National Railways granted for a few months in the year for the transportation of these lignite coals did not in the first year of its operation result in the development of a large amount of business. So as yet Alberta coal does not play an important role in the solution of the fuel problem of the "Acute Fuel Area." Efforts are still being made to create a market for these coals in Ontario and no doubt the special rate will be repeated for limited periods during each year. Time alone will disclose the success or failure of such efforts.

Lignitic coals suitable for domestic purposes, must undergo a very thorough screening at the mines before loading onto cars, in order to reduce to a minimum, the quantity of fines. This naturally entails a large wastage at the mines, since these fines are of little use for industrial purposes and are certainly not suitable for domestic purposes in that state. In order to convert the fines into a domestic fuel, briquetting would have to be resorted to and successful briquetting could not be accomplished without first submitting the fuel to heat treatment. The cost of manufacturing in relation to selling price and the limited quantity of briquettes for which a market could be found would not warrant such processing of the mine screenings.

2—Regarding the regaining of the St. Lawrence pre-war market, which during the war was partially lost, it is sufficient to say that the province of Quebec, at least, is able to absorb a large quantity of the coal which can be annually mined in Nova Scotia, but the quantity which is mined in Nova Scotia and which can be mined with the present equipment is limited, and even though the Nova Scotia mines increase the production to the highest level which was attained before the war, it is questionable whether the quantity of fuel thus mined would supply the requirements of Nova Scotia and those of Quebec.

In the near future, we shall probably witness the production of coal in Nova Scotia on a much larger scale and the shipment of this coal to Quebec and certain points in Ontario, which can be economically served by water transportation, or those points which are not too far distant, by rail, from the mines. It is, however, scarcely probable that Ontario can ever depend to a very large extent on Nova Scotia bituminous coal for industrial and domestic requirements.

3.—The successful development of machinery for manufacturing peat according to the air-dried-machine-peat process, which is the result of the investigation conducted during the past five years, by the Joint Peat Committee, appointed by the Federal Government and the Government of the Province of Ontario, makes available the large fuel resources now lying dormant in the many peat bogs which are strategically situated throughout the more inhabited portions of these two provinces.

Peat manufactured according to the air-dried-machine-peat process produces a fuel which is entirely satisfactory and very desirable for domestic purposes. This fuel can be used to great advantage and more efficiently than the higher grade coals, such as anthracite or even metallurgical coke, in the early spring and late fall in hot air furnaces, hot water furnaces, and during the entire year, in kitchen ranges and fireplaces. In the course of this investigation the Peat Committee through the employment of a new type of pulverizer, namely, a swing hammermill shredder, succeeded in materially increasing the apparent density of the peat blocks, and this has had a very beneficial effect on the burning qualities of the fuel. The cost of loading on car one ton of fuel produced by a manufacturing unit of a capacity of 20,000 tons of peat per season of 100 days, operating 20 hours a day, was determined by the Peat Committee to be $3.50 including all expenses, and the peat manufactured in the course of the investigation, which amounted to several thousand tons, was sold at $5.00 per ton f.o.b. cars.

A company has been formed and has taken over the plant on the bog at Alfred, Ontario, which was operated by the Peat Committee, and this company will remodel the plant according to the recommendations, which the Peat Committee considered to be essential for conducting commercial operations. The fuel produced by the company at the Alfred plant will practically all be sold for domestic purposes, and the writer has been informed will be available for next season's requirements. However, a much wider field will be opened up for the utilization of peat fuel for industrial purposes when the manufacture of the fuel has been well established and large quantities are available.

The chemical analysis of the various samples of peat representative of the bogs in the provinces of Ontario and Quebec so far investigated by the Federal Department of Mines show that the average nitrogen content is very high—about 2 per cent of the absolutely dry peat. This should be kept in mind when the utilization of peat for the production of power either through the media of a steam generator and steam engine or a gas producer and gas engine is considered. If it is desired to generate power, the most efficient method to employ is that which makes possible the maximum recovery of the nitrogen in the form of ammonia or ammonia compounds. When peat is gasified in a Mond by-product recovery producer, the nitrogen content of the fuel is largely recovered in the form of ammonia and this in turn is converted into ammonium sulphate, a valuable fertilizer for which the demand is considerable. When peat is burned in a producer of this type, approximately 75 per cent of its nitrogen content is recovered as ammonium sulphate, and, when the credits for the sale of this are allowed for, the power gas generated can be disposed of very cheaply. It is not probable that the demand for peat as a fuel for steam raising will ever assume any importance, it is too valuable a fuel for other purposes.

4.—The utilization of solid fuels in the powdered form for metallurgical and industrial purposes in general is gaining great importance, especially in the United States where large power plants are now in operation burning fuel in the powdered form. The advantages of using fuel in the powdered form are:

1.—Complete combustion.
2.—Possibility of using coals high in ash.
3.—Possibility of using the lower grade fuels such as lignite and peat to greater advantage than when they are burned in the solid form according to conventional methods.
4.—Decrease in labor cost due to a reduction in the number of firemen required.
5.—Ease of regulation to suit working conditions.

Improvements are continually being made in the methods and apparatus for burning powdered coal and this system is now said to be very nearly as simple and easy to operate as the mechanical stokers so largely employed for burning coal in large steam plants.

A very large field appears to exist for the generation of steam by burning coal in the powdered state in the prairie provinces where the only fuels met with are lignites, some, for example those of Saskatchewan, being of low grade. When the demand for power becomes of sufficient magnitude in that portion of Canada, it may be found that these lignites can be most efficiently used in the powdered state without any expensive preliminary treatment, such as artificial drying and pulverizing to the degree of fineness which is found necessary with bituminous coal.

But a much more important field for the application of powdered fuel appears to the writer to exist in the generation of steam on the locomotives of the transcontinental railways traversing the prairie provinces where the burning of lignite coals is now prohibited during the summer season on account of the fire hazard caused by the emission of dangerous sparks when lignite coal is burned in the ordinary manner on grates. The writer has been informed that locomotives for burning

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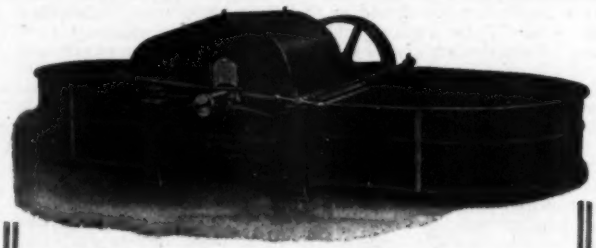

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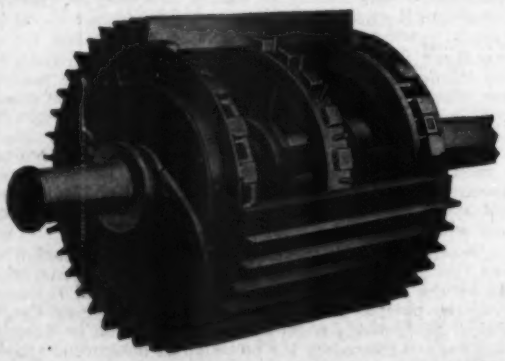

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in the powdered state the low grade coal of Brazil are in successful operation on the railways in Brazil. If the low grade coals of the Western provinces can be burned in locomotives in a similar manner, the quantity of fuels now imported from the United States for railway purposes can be materially reduced and moreover, the power developed in locomotives, considerably increased. An investigation to determine the feasibility of utilizing fuels in the powdered form on locomotives, the writer believes will disclose great possibilities.

5.—The carbonization and briquetting of the low grade lignites of Saskatchewan with a view to producing a domestic fuel to displace anthracite coal in Manitoba and portions of Southern Saskatchewan, it was believed would open up large fields for the exploitation of the low grade coals of Saskatchewan and those of Southern Manitoba, and eventually displace the anthracite coal annually imported for domestic purposes in Manitoba and portions of Saskatchewan. At the time the investigation was begun by the Lignite Utilization Board to develop a process for carbonizing and briquetting the Saskatchewan lignites, a real need existed for finding a satisfactory substitute for anthracite coal which was continually increasing in cost to the consumer, but as stated above, before the investigation was completed and it is not completed yet, the domestic fuel market of Manitoba was captured by the coal operators of Alberta. So the field which now exists for the application of a successful method of carbonizing and briquetting lignites is uncertain. In connection with the process developed by the Lignite Utilization Board and the one which the Board is now employing, namely, the Hood-Odell Carbonizer, it is of interest to note that the by-products recovered are of small importance and do not have a bearing on the cost of the finished fuel.

6.—The process above described may be termed a low temperature carbonization process. This and the process devised by Pirron and Caracristi are the only two low temperature carbonization processes which have been attempted in Canada. The latter is being installed at Walkerville, Ontario, at the Ford plant, and will, the writer has been informed, be put in operation in the near future. Large quantities of bituminous coal will be carbonized daily at this plant for the main purpose of recovering tar oils and other by-products. The carbonized residue will be used in the powdered form for generating steam.

The most important claim made for the Pirron-Caracristi process is that very large quantities of tar oils can be recovered and that with it high volatile coals will prove a valuable source of oil which can be refined for motor and other purposes. In brief, the Pirron-Caracristi process consists in carbonizing coal in a more or less finely divided condition on a moving table which floats on a bath or molten lead. The temperature at which carbonization takes place is, therefore, uniform and easily controlled. It is also claimed that the time of carbonization is reduced to a minimum.

In connection with low temperature carbonization it may be interesting to note that a car load of peat fuel, manufactured by the Peat Committee at Alfred, was sent to the Longford plant of the Standard Chemical Company, to determine whether peat could be successfully carbonized in retorts specially designed for distilling hardwood. The results of the test, conducted there, demonstrated that peat was an excellent fuel for that purpose, that the by-products obtained were satisfactory, with the exception, principally, of alcohol, which was of lesser quantity, and that the large quantity and high quality of the peat charcoal produced almost offset the decrease in the quantities of alcohol, acetic acid, etc. The conclusion arrived at was, that when hardwood becomes too scarce for distilling in this manner, peat will be in demand as a substitute.

7.—The processes most generally employed throughout the entire civilized world for carbonizing coal employ high temperatures. By-product recovery coke ovens in which all of the coal carbonized in the United States, Europe and Canada is coked, employs a high temperature. With this process the maximum yield of coke is produced, a large quantity of by-products and a large quantity of gas of high heating value.

With a view to finding a substitute for the anthracite annually imported into both Ontario and Quebec for domestic purposes, the Dominion Fuel Board undertook an investigation to determine the feasibility of erecting by-product recovery coke plants at strategic points in Ontario and Quebec for manufacturing a domestic fuel from Canadian fuels when and where possible, and from coals imported from the United States. With such a process not only is it possible to produce a highly satisfactory domestic fuel, but also a large quantity of gas in addition to other by-products. The gas can be successfully employed for domestic and other purposes in place of the gas now generated in gas retorts. The results of this investigation, when completed, may show that a considerable portion of the anthracite now annually imported into Ontario and Quebec can be replaced by by-product oven coke and that the gas generated in the by-product recovery plants, if erected, can be satisfactorily and profitably disposed of to existing gas companies. A ready market exists for the other by-products such as, benzol, tar oils, and ammonium sulphate. When plants of this type are put in operation a fuel equal in every respect to anthracite will be available for domestic purposes at a price considerably lower than that at which anthracite is now being sold. It should be borne in mind when considering the value of coke for domestic purposes that the quality of the anthracite now annually imported is deteriorating, consequently, the heating value is lower and will become lower, whereas suitable coals for coking purposes low in ash can be procured in abundance from the United States and from Nova Scotia Collieries at a comparatively low cost.

Through the exploitation of the peat resources of Ontario and Quebec on a large scale, the establishment of by-product coke ovens at strategic points in Ontario and Quebec, and the utilization of low grade western fuels in the powdered form as a fuel for railway locomotives, a very substantial reduction may be looked for in the importation of both domestic and industrial fuels.

The Northwest Paper Co. Steam Plant

In connection with the construction of the new chemical pulp mill, the Northwest Paper Co., Cloquet, Minn., included in their program a new steam plant of sufficient size to furnish steam power for all of their operations.

The new plant, designed by the engineering firm of George F. Hardy, has now been in successful operation for a month and is one of the most modern boiler plants in the country. The structure, like the other buildings just completed, is of structural steel with brick panel walls, steel sash and gypsum roof, with reinforced concrete floors. The size of the boiler room is 50x105x48 ft. high, the turbine room 34x75 ft., and the wing for the coal bunker and auxiliaries, 24x30x68 ft. high.

The equipment includes four 834 horse power Babcock and Wilcox Sterling water tube boilers in a Dutch oven setting of Michael Liptak design and installation with self-contained economizers and superheaters. The Detroit Stoker Co. furnished the nine retort automatic underfeed stokers under each boiler. The draft is induced by means of fans and engines purchased from the Clarage Fan Co.

The R. H. Beaumont Co. installed the coal handling system, which is practically automatic. The coal received in hopper bottom cars is dumped into a deep pit under the tracks. A skip hoist carrying capacity of five tons conveys the coal from the pit to the storage bunker, raising it about sixty-five feet. After dumping, the hoist rolls back down for another load.

The coal storage bunker, with a capacity of about 300 tons, is hung on the steel columns of the bunker house, and delivers coal through small openings in the bottom to a traveling larry, carrying two or three tons at a load. This larry is electrically operated and travels on overhead rails the length of the boiler room, delivering coal to the various stokers.

The plant will consume, in addition to coal screenings, a large quantity of hogged sawmill refuse, besides the refuse from the wood preparing plants. This material will be elevated above the boiler house roof on a long belt conveyor, and from there will drop to a Caldwell distributing conveyor above the Dutch ovens. The feeding device is a closed system installed by Allington and Curtis.

The ash handling system furnished by Allen, Sherman, Hoff Co. consists of hoppers installed in the basement directly under the rear of the furnace grates. When the hopper is filled, a spray of water cools the ashes, the gates are opened, and the ashes dumped into demountable truck platforms which are hauled away with an electric truck.

The breeching and dampers carrying the smoke to the chimney was built by the Wm. Bros. Boiler Works. The chimney is a brick stack, 250 ft. high, built by the Alphons Custodis Chimney Construction Co., of radial brick.

The Elliott Company have installed a modern device known as a deaerator, for the purpose of removing air and destructive materials from the feed water. The auxilliary pumps are furnished by the A. S. Cameron Steam Pump Works, and all motors by Westinghouse Electric & Mfg. Co.

Every precaution has been taken in the installation of metering and regulating devices, to insure intelligent and economical operation of the plant. The meters were purchased from the Republic Flow Meters Co., master steam gauge from the Ashton Valve Co., and boiler and feed water regulators from the Hagen Corporation and Northern Equipment Co., respectively.

The rated capacity of the plant as it stands is 5,000 horse

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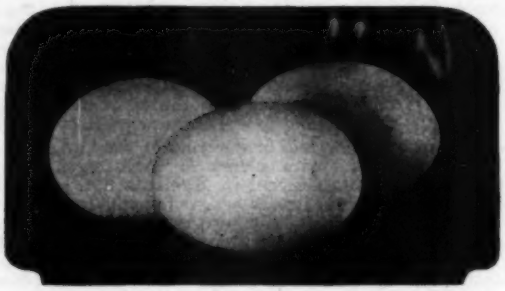

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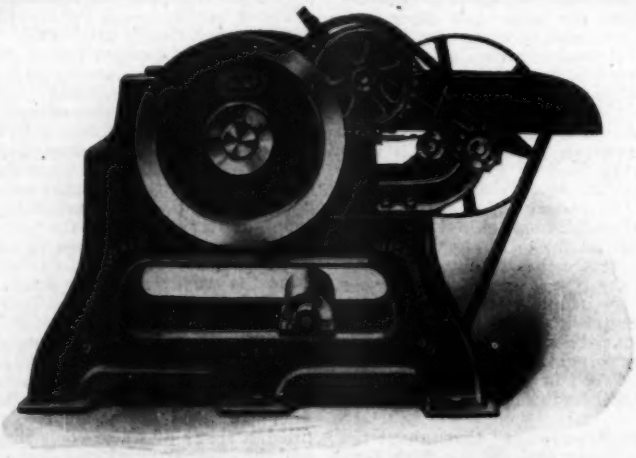

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power, but the building is so designed that the equipment may be double by removing the brick panel wall and making the necessary additions. The steam produced by the boilers is distributed in the mill at 155 lbs. pressure, the various uses being in the cooking operation, the steam engines and the steam turbine generators.

The turbine room is adjacent to the boiler room and contains one 1,500 kilowatt non-condensing Westinghouse turbine generator and one 2,500 kilowatt condensing turbine generator of the same make, together with switchboard panels for distribution of electric current throughout the plant, and traveling crane for facilitating repairs.

The No. 1, or 1,500 K. W. turbine will deliver, besides power to its direct connected generator, exhaust steam at varying degrees of pressure to the different processes in the pulp and paper mills. The chief uses of this low pressure steam will be in the drying of paper in the paper machines; the evaporating of residue from the cooking operation in order to reclaim the original chemicals; in making hot water for washing pulp; and ni heating water for the long pond in winter. Besides the above, a portion will be used in heating the mills during the cold weather.

The No. 2 turbine will be run solely for power purposes, and the load will be dependent on the amount of hydro-electric energy produced by the water power development. The completion of the new steam power plant puts the company on a balanced power basis, where it is not likely to face intermittent operation of mills on account of high and low water conditions. A constant supply of power, both steam and water, will be available throughout the year, and high grade papers will be produced from pulp manufactured in the two modern chemical pulp mills.

Michigan News

Hold Monthly Association Meeting

The last meeting of the Michigan Division of the American Pulp and Paper Mill Association was held at the Park-American Hotel on January 17th. At this meeting, Mr. Tom Harvey of the Gardner-Harvey Paper Company of Middletown, O., gave a talk on "How Can We Best Serve the Men who We are Working For?" This speech is printed on another page of this issue. After the paper was finished, he discussed in detail the operation of the Civic Club at Middletown, O.

Mr. Brisbois, of the Sutherland Paper Company, told about the Harmony Club, which is operated in connection with the Chamber of Commerce of Kalamazoo. He stated: "You people misunderstand what the benefit of the Harmony Club is. We are working in connection with the Michigan Free Employment Bureau, and plan to cut down turnover in labor. Every morning each superintendent, or person that does the hiring for the plant, calls up the Michigan Free Employment Bureau and states whether they need help or not and for what job. Then follow right though. Let the superintendent give him his first check, and his last one. For you do not want him to drift away. I have found that I can come closer to my men this way, and can get better results from them, and also cut the labor turnover." Mr. Brisbois is president of the Harmony Club.

Among those present at this meeting were: Tom Harvey, Gardner-Harvey Paper Co.; E. H. Gilman, Bryant Paper Co.; E. T. A. Coughlin, Allied Paper Mills; Mr. Hayward, University of Michigan; Mr. Maiser, Alex MacVie, Joe Loughead, Western Paper Mills Supply Co.; George McGuire, Bryant Paper Co.; Mr. Jerkins, Jacob Parent, Western Board and Paper Co.; Herb DeYoung, Allied Paper Mills; Albert Lindners, Allied Mills; Geo. H. Fountain, Allied Mills; Alfred Bryant, Bryant Paper Co.; L. M. Mongrieg, U. S. Rubber Co.; Mr. Wilcox, U. S. Rubber Co.; Mr. Burnes, Eddy Paper Corp.; Frank Johnson, Allied Paper Mills; A. G. Wightman, Hawthorne Paper Co.; Vern Hotelling, Watervliet Paper Co.; Clarence Thorne, Watervliet Paper Co.; Michael Redmond, Kalamazoo Paper Co.; Jake Kuss, Allied Mills; Emil Yohnke, Standard Paper Co.; N. M. Brisbois, Sutherland Paper Co.; Mr. Foxglover, Clarence Harter, Bernard Benson, Williams Gray Co.; Mr. Burroughs, Harry Ulrich, MacSimBar Paper Co.; Mr. Austin, Wolverine Paper Co.; Harry Sievert, Michigan Carton Co.; C. G. McClellan, Kalamazoo Vegetable Parchment Co. and W. A. Yule, Kenwood Felts.

Progress at Bryant Paper Company

The Superior Division of the Bryant Paper Mill is down and the new conversion building at the Superior is complete. They are getting ready to install the machinery. The beater room roof has been raised and new ventilators have been placed on it. The steam line from the new power house is being rushed over to it as fast as possible. At present, they are operating two boilers at the Superior for fire protection only.

Edward Rutz is now superintendent of power and maintenance of the company. Richard Schwartz is now chief operating engineer and Thomas Almack is combustion engineer. At present the new power house is operating all of the Bryant Division. Mr. Rutz also announces that the work to date is up to schedule, despite the cold weather they have been having.

H. C. Fleischer, of Aschaffenburg, Germany, has been added to the technical staff. He is trying to work out new improvements throughout the plants.

Celebrates 25th Anniversary as President

On January 26, 1924, F. M. Hodge celebrated his 25th anniversary as the president of the Kalamazoo Paper Mills. He was named president on January 26, 1899, to succeed Samuel A. Gibson. The employees held a giant indoor picnic at the Masonic Temple, where over 1,000 people participated.

President Hodge briefly addressed his co-workers telling them: "We were fortunate to keep going steadily last year. For that we cannot give all the credit to the office, not by any means. You are entitled to as much yourselves, for you must have made good paper, just as you have always made good paper, to make it possible for us to sell it so successfully."

William Scott, chief engineer; Michael Redmond, general superintendent; Mrs. Maud Young, welfare worker, and A. B. Connable, director, spoke, congratulating Mr. Hodge on the wonderful success he had made of the Kalamazoo Paper Company in the last 25 years.

The paper men are well represented on the boards at the different banks in Kalamazoo. The Kalamazoo National has just elected W. H. Lawrence, of the Western Paper Makers' Chemical Co., and re-elected W. B. Milham, vice-president of the Bryant Paper Co., and W. M. Loveland, president and general manager of the Watervliet Paper Co., to their board. On the board at the First National is: Felix Pagenstecher, president and general manager of the Bryant Paper Co.; B. C. Dickinson, president of the Standard Paper Co.; F. M. Hodge, president and general manager of the Kalamazoo Paper Co.; A. L. Pratt, chairman of the board of the Allied Paper Mills. At the Kalamazoo City Savings Bank, Jacob Kindleberger, president and general manager of the Kalamazoo Vegetable Parchment Co.; John A. Pyle, second vice-president of the Allied Paper Mills, and George P. Wigginton, president of the Kalamazoo Loose-Leaf Ledger Co.

The MacSimBar Paper Co. has had a very good year in 1923, according to the report filed at the last stockholders meeting. As the results of the extensive campaign of improvements inaugurated under the direction of C. E. Nelson, president of the plant, it today is in an excellent physical condition and is able to show an increase of 25 percent in total production at a substantial saving. The officers elected for the coming year are: President, C. E. Nelson; vice-president, S. W. Simpson; secretary, S. B. Monroe; treasurer, George E. Bardeen; assistant secretary and treasurer, George D. Cobb. The directors are: W. S. Thompson, S. G. Earl, W. E. Kidder, F. C. Hall, E. W. Stone and A. Vanderveen.

The plan for co-operation with the University of Michigan and all the paper mills in Kalamazoo River Valley has failed to materialize. The Kalamazoo Vegetable Parchment Company, the Kalamazoo Paper Company and the Allied Paper Mills have signed up with the University of Michigan, but the Bryant Paper Company have hired Dr. Fleischer, a doctor of chemistry and engineering from Afshaffinburg, Germany, to take charge of their extension work. As the Bryant Paper Company is one of the biggest paper companies in the valley, this will raise the rate for all the smaller mills and will probably force the smaller mills out on account of the high cost.

The Hawthorne Paper Co. has re-elected their board for the coming year. The members are: J. H. Dewing, S. B. Monroe, Hubbard Kleinstuck, E. W. Chase, A. H. Dwight, A. G. Wightman; president, A. H. Dwight; vice-president and secretary, R. L. Pease; treasurer, S. B. Monroe. A satisfactory year's business for 1923 with the outlook unusually bright for 1924 was reported by A. H. Dwight. Mr. and Mrs. Dwight will leave for Florida in a few days. They will travel by train as far as Jacksonville and will motor from that point to the southern portion of the peninsula.

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Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

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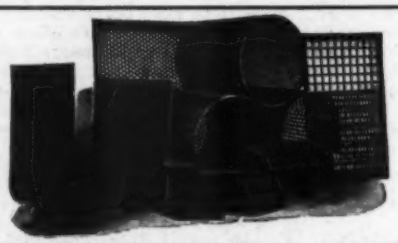

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UNION BRONZE SCREEN PLATES

(Best phosphorized Cast Metal)

Old Plates RECLOSED and RECUT to accurate gauge
UNION BRONZE SCREWS for Screen Plates
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

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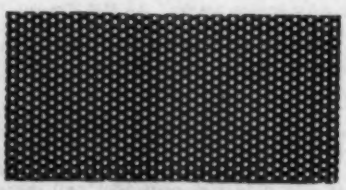

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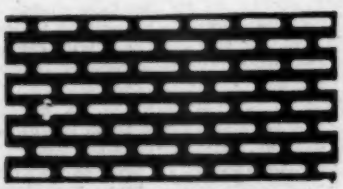
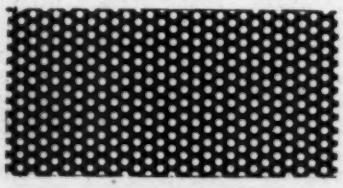


1/8 x 1/2" Slots



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Extensive changes have been made at the Monarch division of the Allied Mills. The cutters, in the rawstock finishing room have been changed around in order to get more production from them. In the coating mill, the old coating machines have been torn out, and two trimmers and three cutters have been put in. Thirty girls have been employed in order to handle their coating business. One of the coating machines has been lengthened out to 75 inches and another one is in process of being widened out.

The Kalamazoo Trading Co. has for some time been operating two plants, the Main Street plant and the old Gumbinsky plant. They are moving out of their Main Street plant and are going to conduct business exclusively from their Gumbinsky plant. The Gumbinsky plant was purchased from Bryant Paper Company some time ago. Albert Meisterheim is general manager of the concern.

At the annual election of directors of the Home Savings Bank, C. Allen Fox, secretary-treasurer of the Bryant Paper Co., was elected to the Board, while W. B. Milham, vice-president of the Bryant Paper Co., and L. W. Sutherland, president of the Sutherland Paper Co., were re-elected to the same board.

On account of ill health, Sam W. Simpson was forced to resign his position as general superintendent for the Allied Paper Mills, and he is not sufficiently recovered yet to go into active business. He has been very active for the last thirty years with the Bardeen Paper Co., of Otsego, Mich.

The Petoskey Paper Mills of Petoskey, Mich., which was partially wrecked by fire some time ago, was scheduled for sale to the highest bidder by the Grand Rapids Trust Company, Grand Rapids, Mich., January 29.

Mr. and Mrs. William Loveland planned to said on January 30 on a Mediterranean cruise. Mr. Loveland is president and general manager of the Watervliet Paper Company.

Kalamazoo capital is very much interested in the Provincial Mills of Canada, whose current developments are briefly described under the Canadian News heading in this issue.

Wisconsin News

Port Edwards, Wis., Feb. 1, 1924.

Safety Work and Other Developments at Nepco Plant

During the year of 1923, the safety department of the Nekoosa-Edwards Company, with mills at Port Edwards and Nekoosa, Wis., has worked very hard on the prevention of accidents. Every thing was done to cut down the number of accidents and sickness to a minimum so there would not be any more suffering among the employees than was absolutely necessary. The work done has been rewarded in the few accidents which occurred during the year. Less than 100 accidents were recorded in all the departments and when the number had been cut from 212 in the year 1920, it is astonishing to note that the number has been cut in less than half.

The annual meeting of the N. E. M. B. A. of the Nekoosa-Edwards Paper Co. was held at the Port Edwards Hotel on Thursday evening, January 17th. The Nepco Employees Mutual Benefit Association was organized on March 1, 1920, to provide protection to employees of the company and their families against sickness, accident and death. This does not include accidents received while on duty as these are covered by the State Compensation Act. The members include all the men in the plants of the company, there being 868 members which is 96 percent of the total number of men employed, this number being practically every employee of the company who is eligible for membership. 1923 was a very successful year as the receipts showed $16,338, while the disbursements of $13,322 was paid out to memberships.

Reports show that the Nekoosa-Port Edwards Building and Loan Association, which was organized early in the fall of 1923 to enable the employees of the Nekoosa-Edwards Paper Co. to build their own homes, have had a very successful year. The report shows that loans had been made to the amount of $11,240.09 and that the total number of stockholders was now 90. There have been issued 15 shares of paid up stock and 831 shares of installment stock. Ten houses have been built at Port Edwards during the past year, six of them sold to employees on the building and loan plan. The number of applicants for houses the coming year indicate that all the houses available will be in demand, according to the report, and many more will be built by the association in the spring.

The annual meeting of the stockholders of the Nekoosa-Edwards Paper Co. was held in the company's main offices at Port Edwards, Wis., on Wednesday, January 16th. The reports made by the different officers showed that the company had passed a successful year and the outlook was very bright for the future year of 1924. Report made by sales manager showed that all of the company's eight paper machines were running on orders.

Wisconsin Forest Protective Association

A drive is to be made in the State of Wisconsin during the month of February, at the end of which time the charter will be closed, to get all of the pulp and paper mills of the State represented in this new forestry association.

The membership fee is based upon the consumption in cords or per 1,000 log feet consumed by any one mill during the previous year, which for the purpose of membership at the present time would be 1923.

There are now represented in this Forest Protective Association a large number of the mills including all of the larger ones, except one, and totaling a consumption of over 600,000 cords per annum.

Three of the State Commissions are very much interested in this work and at the present time there is a bill in the United States Senate, presented by Senator Charles McNary of Oregon, which if passed and proper legislation is passed in the State of Wisconsin will bring about in a short time the replenishing of the State's wood supply and insure the present pulp and paper mills in Wisconsin a continuous supply of the proper grades of pulp wood.

It is part of the work of the Wisconsin Forest Protective Association to aid in the bringing about of proper education and legislation to the end and with the aid and interest the State officials are taking in this important work to keep Wisconsin in its present position in the wood producing industries of the United States. Such end is assured if all those in said industries who should be interested will help by putting their shoulder to the wheel.

The Madison section of the Society of American Forestry, located in Madison, Wis., is doing its part to bring about the desired results and working not only with United States and State officials, but also with D. C. Everest, president of the Wisconsin Forest Protective Association.

Low Water Causes Shortage of Groundwood

The very low water in the rivers of Wisconsin, in fact, all over the Northern States during the fall of 1923 and up to date in 1924 has curtailed the amount of water power available for the manufacture of groundwood and most of the mills have been down to bed rock for a considerable period. Many mills are now buying this grade of pulp from foreign manufacturers from foreign countries, but the cost thereof is almost as much if not more than sulphite pulp of domestic manufacture.

Most of the Wisconsin mills are operated with direct connected water wheels, and only the surplus or high water flow is used for the manufacture of groundwood. Few of them are driven electrically and therefore they are not in a position to buy power from others, or to make power by steam turbine to produce the pulp they require. Some of the Wisconsin mills are now installing electrical machinery as auxiliary to their water wheel equipment and if another low water season like the one just past follows more of them will have to do so, or else go out of the business of making groundwood papers.

There is a considerable demand at present for many grades of paper which use a large percentage of groundwood and this tends to reduce the stocks and cause the shortage referred to.

Tomahawk Kraft Paper Company

The new mill of the Tomahawk Kraft Paper Co. at Tomahawk, Wis., will be put into operation within a few months, according to statements recently made by officials of the above company. Prior to the time that this mill was purchased by the above company it was operated for the manufacture of catalogue papers. All of the raw materials at that time were purchased, no pulps being made at the mills, and it was in reality nothing but a converting plant.

A new sulphate pulp plant is being erected for the manufacture of forty tons of pulp per day, and the water power has been developed into one of the most economical hydro-electric plants on the Wisconsin River. All the latest appliances are being installed in this new industry. A total of

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about 200 men will be regularly employed after this mill is fully equipped and put into operation.

Mr. O. Bache-Wiig, of the Wausau Sulphate Fibre Company of Mosinee, is manager of the new plant, and the engineering for the New Tomahawk plant is all under the supervision of Mosinee engineers.

Consolidated Water Power & Paper Co. Elects Officers

Officers and directors of the Consolidated Water Power and Paper Company of Wisconsin Rapids, Wis., who served during the past year were all re-elected at the annual meeting of stockholders of the company held at the offices of the company on January 24th. Only routine business was transacted at the meeting, following which a light lunch was served to those in attendance.

The officers of the company are: George W. Mead, president; R. L. Kraus, vice-president; George B. Berkey, vice-president; Isaac P. Witter, treasurer, and E. B. Redford, secretary. These officers with Theo. W. Brazeau, constitute the Board of Directors.

The annual meeting of the Thunder Bay Paper Co., Ltd., of Port Arthur, Ontario, Canada, the Canadian timber holding and pulp manufacturing subsidiary of the Consolidated, was also held the same day. The officers and directors of this company are virtually the same as those of the Consolidated.

Pulpwood Arriving at Mills

Shipments of pulpwood from the forests of Wisconsin, Michigan and Minnesota are arriving at the Wisconsin mills in large quantities.

Due to the lack of snow, wood that had been cut could not be transported to the railroad, but on January 1st the first real signs of winter appeared and the woodsmen received an initial snow fall of 8 inches. This was what they had been hoping for a long time, and from this time on plenty of snow has fallen so that woods operations are now at a maximum as there is now from three to five feet of snow in the woods.

Extremely cold weather has also aided the woods operators and logging camps as the mercury has fallen well below zero for nearly every day in the month of January, it having reached as low as 40° below zero. While the weather is too cold for the ordinary person, it has frozen up the runways and the rivers, enabling wood to be transported and also hauled onto the river at the mills by aid of teams and tractors.

New Trains for Logs at Marinette

To take care of the record log shipments from the north, another freight train will be run from the logging camps in northern Marinette county to Marinette, officials of the Chicago, Milwaukee and St. Paul Railroad announced recently. It may even become necessary to add a second train at a later date.

The sawmills in and around Marinette will do a bigger business than in 1923, a record year, lumber heads predict. Last year 75,000,000 feet of lumber were sawed at the mills of the Sawyer Goodman Company and mill men declare that the 1924 total will run above 100,000,000 feet.

If fire is kept from devastating the forests there will be little danger of a timber shortage in Marinette county, lumberman declare. It is estimated that the forests of northern Marinette county will keep the industries of that county going for many years to come.

Officials of Portland Company Visit Wisconsin Mills

Mr. E. H. Mills, president, and Mr. Joseph Kaster, manager of the newly organized pulp and paper company of Portland, Oregon, known as Portland Pulp and Paper Company, visited the different mills of the Nekoosa-Edwards Paper Company at Port Edwards and Nekoosa, Wis., on Wednesday, January 23rd, and inspected the two mills of the Consolidated Water Power and Paper Company at Wisconsin Rapids and Biron, Wisconsin, on Thursday the 24th.

Increase in the demand for machine glazed paper is seen in the orders placed with the Beloit Iron Works of Beloit, Wis., makers of paper machines, for special types of machines from mills engaged in the manufacture of that commodity. New mills making this grade of paper have come into the market during the past year, and at the present time the above company is working on three such machines to be shipped to different producing regions.

At the annual meeting of the Nekoosa State Bank held in the banking rooms of the bank on Friday evening, January 18th, John E. Alexander was elected vice-president to succeed his father, L. M. Alexander.

Ohio News

Middletown, O., February 1, 1924.

Monthly Meeting of Superintendents

Frank A. Smith, official of the Paul A. Sorg paper mill and of the new Frank Smith paper mill nearing completion in this city, was the speaker at the regular monthly dinner meeting of the Paper Mill Superintendents' Association held at the Hotel Manchester on January 26. Mr. Smith visited paper mills throughout Europe during his trip to that continent this summer and he spoke interestingly of his experiences.

Mr. Smith has been superintendent of the Sorg and Oglesby mills for a number of years and is now vice-president of the Sorg company. He is considered one of the leading paper makers in the whole industry.

In his observations of Swedish methods, he told of the Swedish use of sulphite, which has proved a labor saving device, and of the drive on the back of the machines in use, whether antiquated or modern.

Some of the machines that he saw were older than any in use here and many were of the same model as American machines of fifty years ago.

The manufacture of cigarette tissue takes place in machines with copper heads, in which the pulp is delivered through a series of spouts and screened into the head box.

Pointing out features that were unfamiliar to him, he spoke of the suction boxes which are all rounded at the bottom; the fact that felt is never washed; that machines are equipped wtih squeeze rolls and shower pipes; that all machines average three presses; and the lack of calenders in Germany, where there are two rolls on the driers, and the wool felt is run through a tub of water and through squeeze rolls, with the result that paper is smooth and flexible.

Mr. Smith stated that in his opinion the fastest news print machines are operated in Norway and the best finishing is done in Scotland and England. In these countries, the beaters are of small capacity, none averaging over 1,000 pounds and most of them under 600 pounds. However, each mill has many beaters of this capacity. The bars are spaced 1¼ inches apart and are operated at a nominal rate of speed. Most of the beaters are tile lined which is beneficial because of its cleanliness, because it facilitates the traveling of the stock through its lack of friction.

All during his travels, Mr. Smith saw but one cotton drier felt, all being of wool. He noticed many super-calenders which always had the best dampeners.

Commenting on conditions in Europe, the speaker continued:

"I don't think Germany has changed materially during the war." He explained that workers there are paid a standard salary, regulated by the daily value of the mark. They receive an average of $1.25 a day, receiving 200,000 marks one day and 300,000 the next, in accordance with the fluctuation of the mark.

No matches are seen on the streets of Europe, Mr. Smith said, altho millions are manufactured in Sweden. Ho told that he was refused admittance to but few paper mills and all these were in Germany where he was regarded as a foreigner.

Following the speech, Mr. Smith led in a discussion in which the following guests enthusiastically participated: Edward H. Butterfield; Jack Smith, Jr.; Jack Smith, Sr.; J. J. Hain; B. M. Bishop; H. L. Dibble; J. C. Leach; Tom Harvey; A. X. Schwebel; William Rettig, Gardner Harvey Paper Company, Middletown; Homer C. Ferguson; Charles Soule; Raymond A. Steffen; A. L. Wells; C. A. Bartlett; C. A. Kelly, Champion Coated Paper Company, Hamilton; L. T. Murphy, St. Marys, O.; Frank A. Smith; Claude A. Sorg; R. B. Rowe, Paul A. Sorg Paper Company, Middletown; W. T. Schenck, Black-Clawson Paper Company, Hamilton; H. W. Server, John M. Murray; C. A. Miller; R. L. Eminge, Miami Paper Company, West Carrollton; A. C. Fard; A. J. Allison; Frank R. Henry; A. A. Simonds, Simonds-Dayton Company, Dayton; R. E. Bevis, Shartle and Bevis Machine Company, Middletown; C. R. Crawford; J. A. Hamun; H. D. Martindale; Charles W. Shartle, Shartle Brothers Machine Company, Middletown; John Calder, Wrenn Paper Company; C. H. R. Johnson; V. Frederich; C. F. Niederman; Homer H. Latimer, Beckett Paper Company, Hamilton; E. F. Bearce, Chillicothe Paper Company, Chillicothe; Tom O'Flynn; E. R. Judd, Wardlow-Thomas Paper Company, Middletown; R. C. Zecher, Sorg-Oglesby Paper Company, Middletown; H. E. Sutton; F. E. Moser, Oglesby Paper Company, Middletown; Thomas H. Keogh, Peerless Paper Company, Dayton; Afam Ritz, Ohio Paper Company, West Carrollton.

The Athletic Association of the Gardner Harvey Paper Company has chosen their officers for the coming year. Those

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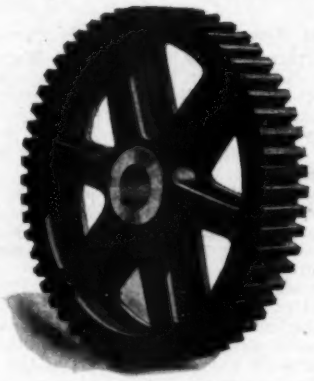

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Reverse motion may be obtained by installing the clutch between bevel gears on machinery.
Spur gears are often used to get two speeds on machinery.
The Johnson Clutch requires the minimum of space. It is smooth in its pickup and does not grab like a jaw clutch.

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THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

selected are H. L. Dibble, president; Walter Hadley, vice-president; Ed Geran, secretary-treasurer; Fred Roberts, business manager. An advisory board of six members will be appointed to make arrangements for the base ball season. In all probability the team will again be a member of the K. I. O. league.

Fifteen directors and stockholders of the P. A. Sorg Paper Company held their annual meeting, January 24, which was followed by a luncheon at the Hotel Manchester.

New England

Boston, Mass., February 1, 1924.

January started the new year off in New England with a general improvement in some paper mill operations. Unfortunately the situation is not yet very encouraging as respects to wrapping papers, the improvement noted having been quite largely confined so far to the white papers. One report that was given quite some prominence stated that for a period of weeks operations of the American Writing Paper Company showed a slight profit. It should be stated in explanation of this, however, that these were profits over and above current liabilities and did not take into the reckoning the heavy outstanding claims at the time of the receivership. Nevertheless it is so long since anything remotely resembling a profit was reported from the big writing paper factor that this in itself indicates some improvement in the fine paper division of the industry. Mills in the Connecticut Valley are operating as a whole at a greater percent of capacity than in several years, judging by all recent reports. The fly in the ointment of the coarse paper division is cheap foreign material both pulp and paper. A few of the smaller mills have been buying Scandinavian pulps at costs ruinously low in comparison to the costs of domestic pulp. Thus some of the larger kraft mills are faced with the alternatives of using a cheap foreign pulp which entails the closing of their own pulp mills, or of manufacturing from high priced pulp paper in competition with mills using these cheap stocks.

The cut of pulpwood by the Great Northern Paper Company during the season of 1923 to 1924 will be approximately 200,000 cords, according to a statement made by Fred A. Gilbert, second vice-president in charge of woods operations. This means a falling off of about 400,000 cords in the cut of the previous season. The reduction is not due to lack of snow for carrying on operations, but because the Great Northern, like other Maine paper mills, has been carrying over large quantities of wood from other seasons. The company's usual reserve is from 50,000 to 100,000 cords, but this year it is well in excess of this. A favorable factor for the Great Northern and other New England mills is the low wages prevailing on common woods labor. In the early fall wages were at the war-time peak, but heavy influx of help brought it down to the present level of $2 per day. Moreover, as jobs are scarcer, men are working harder, and fewer men per 100 cords of wood brought out are required. Their woods payroll numbers 2,500 at present, which is small for them. The company also uses 1,500 horses, but is gradually displacing these with tractors, of which it is the largest user of any paper mill in the world. One man with a tractor can do several times the work with less effort than a man with a team of horses, although upkeep will run about the same. The mills of the company are running at capacity, except at Madison, where the final touches are being made on the new beater room and the power plant.

It was confirmed locally (Boston) by E. F. Aldrich, general manager of the Eibel Process Agency, that the patent on the Eibel process which covers the pitch on Fourdrinier wires expires on February 26, 1924. After that day, therefore, paper mills will no longer be under constraint to pay royalties on the idea. This patent was a very unusual one. It was merely an idea—not a piece of machinery—and related to the pitch of the first element of a Fourdrinier over which the mixture from the beaters runs. By pitching this screen at the proper angle the speed of the mixture was increased and a more uniform and stronger sheet resulted. The Supreme Court of the United States by a unanimous decision handed down in February of last year, upheld the owners of the Eibel patent and judged all who had built or used machinery without licenses with this principle, violators of the patent. Within the past month the Eibel Process Co. made a blanket settlement with the machinery makers, or at least with many of them. It appears, however, that some machinery builders were not involved in the settlement and paper mills using their machines, in which the Eibel idea is incorporated, are still liable for the use of it in the past though future liability will automatically cease on February 1.

It seems probable that despite the political obstructions placed in their way the Great Northern Paper Co., Hollingsworth & Whitney Co., and International Paper Co., will soon be able to provide for a proper flow of water for their mills along the Kennebec River. Another dam located on a different tributary of the river from that originally selected will be created during 1924 to impound from eight to twelve billion cubic feet of water, and probably equal to the proposed Dead River storage basin which was stopped through political manoeuvres at the Maine state capital. The desire is to militate against spring floods and summer droughts and to provide power for more mills on the Kennebec. The new dam will be on the Mooes river.

Hollingsworth & Vose Co., the country's largest rope paper makers, have moved their main offices from the Oliver Building, Milk street, Boston, to the Province Building, 333 Washington street. They are occupying new and enlarged quarters in one of the newest and best office buildings in the city. On Thursday evening, January 31, they held an "office warming" to which members of each mill staff were invited. Dancing, games and refreshments made up a very pleasant evening. This company is a great believer in gatherings of this sort, at which main office and mill are represented, and it unquestionably has done much to promote harmony in the organization.

Important news from Holyoke comes to hand to the effect that a crew of engineers are appraising the property with a view to establishing its actual present value. This will be of service for use in the drastic reorganization that is expected before long. In connection with this fact it is reported locally that the 6 per cent first mortgage bonds have been deposited with the Boston headquarters of the committee in an amount exceeding 50 per cent of the nine million outstanding. This gives the committee authority to proceed with a foreclosure or with any other activity should it become necessary.

The report that the Bath Iron Works of Bath, Me., were to be sold to the General Electric Company is without foundation, according to President W. T. Cobb. The General Electric has considered having certain work done by the Bath company on contract, but that is the only connection of any kind which has been considered. The Bath Iron Works manufactures some lines of paper mill machinery including grinders for mechanical pulp plants and has recently been filling an important order for the Great Northern Paper Co.

Feature of the month was the purchase of the International Paper Company's Rumford Falls, Me., mill by the Continental Paper & Bag Mills. The Continental Paper & Bag Mills normally consumes more than half the output of this paper mill in its Rumford paper bag factory and the purchase was in view of that fact, quite logical. The purchaser issued $6,000,000 of twenty-year sinking fund 6½ per cent bonds to finance this purchase and other improvements.

The New England Freight Association has denied the application of the New England paper mills for reduced rates on paper to Boston on shipments destined for movement by intercoastal steamer to Pacific ports. They held that any reduction they might give would be quickly absorbed by the steamship lines. It is probable that the New England Paper and Pulp Traffic Association will take this case to the I. C. C.

Parker Young Co., an important paper manufacturer of New Hampshire, issued $2,500,000 first closed mortgage 6½ per cent bonds on January 31 to fund maturing obligations and to provide for improvements and betterments at the various plants. The company's head offices are in the Board of Trade Building at Boston, Mass.

The Skowhegan Paper Co. of Skowhegan, Me., which has been closed for some months, will reopen. This firm formerly made tissue hangings and news and will probably concentrate on news for the present. A general renovation of the plant is going on, including installation of new appliances.

Assets of the Northeastern Paper Co., operating a large warehouse for packing waste paper in Cambridge, have been turned over to the D. DeStefano Co., Inc., for operation, following the announcement of insolvency of the Northeastern concern.

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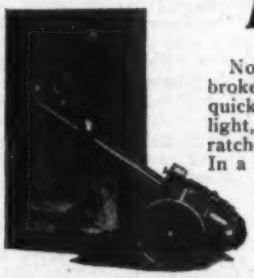

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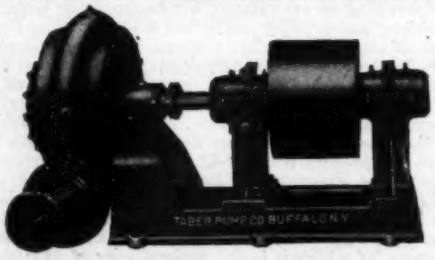

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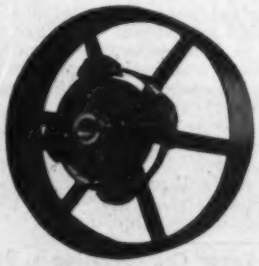

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The Adams Paper Company of Wells River, Vt., has work in progress on extensions and improvements in its plant for the production of kraft and manila tissue papers, estimated to cost $75,000, including equipment.

The S. D. Warren Co.'s big mill at Westbrook, Me., has resumed full time operations after a period of four months on a five-day week schedule.

Since January 1 the important book paper mills at Fitchburg, Mass., two of whom make M.F. for the Curtis Publishing Co., have been increased gradually to full time operations.

Rosenberg Bros., one of the oldest New England firms packing cotton rags and waste papers, have opened offices in the New Province Building, Boston. Their packing plant is in Chelsea.

The case of Hollingsworth & Whitney Co., for a refund of several hundred thousand dollars of overpaid income taxes, is still pending before the federal court of Boston.

Poor business in the coarse paper industry was responsible for the closing of the International Paper Co. mill at Franklin, N. H., in January. This mill produces specialties.

The International Purchasing Co., the leading buyer of rope for paper mills, has moved its head office to the Province Building, Boston.

The Malden Paper Stock Co. of Malden, Mass., was incorporated in January.

Northern New York

Watertown, N. Y., February 1, 1924.

St. Regis to Build $4,000,000 Canadian Mill

Announcement has been made by Floyd L. Carlisle, president of the St. Regis Paper Company and head of the Carlisle paper, power and banking interests, that within the coming year the St. Regis company will branch out into the Canadian newsprint manufacturing field with the building of a mill on the St. Lawrence river about eight miles from Quebec. The capacity of the mill at first will be 100 tons daily, but this will be increased to 1,000 tons as conditions warrant.

Pulp for the mill will be transported from the St. Regis holding on the Godbout river, where a small development will be made to give power to operate a conveyor for loading boats. The Godbout section lies a 24-hour trip by water from Quebec and there the company owns 50,000 acres of timber land. The hydro-electric power for the mill probably will come from one of the Duke plants at Lake St. John, but Mr. Carlisle made it plain that no contract had been signed.

The mill will be built by the St. Regis company of Canada, which hitherto has been only a lumbering concern. Its cost will be about $4,000,000.

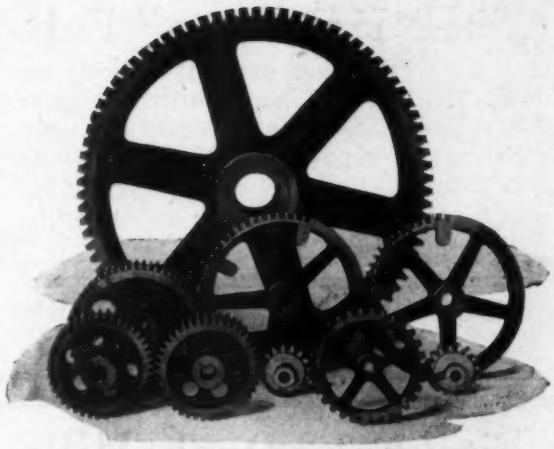
The St. Regis company now operates mills at Deferiet, Harrings and Black River, and the Hanna Paper Corporation, closely allied with it, has mills at Norfolk, Norwood and Raymondville. The total capacity of these mills is around 500 tons a day. Mr. Carlisle said that the domestic manufacture of newsprint by the St. Regis would not be stopped because of the entrance into the Canadian field.

Carthage Sulphite Into Receivers' Hands

After a hectic career, especially during the last two years, when it is declared to have lost $300,000, the Carthage Sulphite Pulp & Paper Company has gone into a receivership in equity. Attorney Charles E. Norris of Carthage has been named receiver, and has been authorized by the federal court to issue $50,000 in receiver's certificates so that the mill may be re-opened and operated again.

Claims of unsecured creditors total nearly $500,000, and the company is capitalized for another $450,000. One of the heaviest creditors is the R. F. Hammond, Inc., of New York, pulp importers, and it was largely through the efforts of this firm that the receivership was secured.

The Carthage Sulphite was begun by the late James A. Outterson, and at his death came under the control of the Equitable Trust Company of New York as trustee of the estate. A year ago J. Victor Baron of Watertown, general manager of the Sherman Paper Company, was made president, and he brought with him Patrick Moran as superintendent. Last fall the sulphite plant of the company burned with a loss of $50,000, and it has never been started up again.



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St. Regis Elects New Officers

Frank A. Empsall, formerly treasurer of the St. Regis Paper Company, was elected to a vice-presidency at the annual meeting of the company held in Watertown, Jan. 9. Carl B. Martin, secretary, was promoted to the treasurership, but will continue his duties as secretary also. Floyd L. Carlisle was re-elected president, Celestin C. Burns was retained as general manager and Corwin T. Jewell was again made assistant to Mr. Burns. Because of the latter's ill health, Mr. Jewell is in practical charge of the company's mills. The company now has four vice-presidents besides Mr. Empsall: Alvah Miller of New York, David M. Anderson, John J. Warren and Ralph B. Maltby of New York.

The Hanna Paper Corporation also held its election on Jan. 9, and returned F. L. Carlisle as president again. The vice-presidents of this corporation are D. M. Anderson, H. Edmund Machold and R. B. Maltby. Mr. Maltby is secretary and treasurer, and Carl B. Martin is his assistant.

The output of the Algonquin Paper Company of Ogdensburg for 1924 has been contracted for. Most of the newsprint produced will go to the Hearst publications. The mill will shortly be equipped to turn out 100 tons every 24 hours. At present it is running some 80 tons a day.

John J. Warren of Brownville again headed the Warren Parchment Company and the Harmon Paper Company at their annual meetings, held Jan. 21.

Pacific Coast News

Actual construction on the new Portland Pulp and Paper Company mill in Portland, Oregon, has now begun, for which a company has been capitalized at $1,500,000, $1,200,000 of which will comprise the cost of the new plant and equipment. The plans call for ten structures of reinforced concrete, all of the most modern type and designed to permit ample room for considerable expansion of production. The Portland Pulp and Paper Company has availed itself of a special method that will make it possible to eliminate the pitch from fir lumber, and as the new plant will be located adjacent to the Monarch sawmill, where all wastage will be utilized, production will be on a minimum basis. Joe Kaster, vice-president of the new concern, is a man who has been actively connected with the paper manufacturing interests of the Pacific Coast for the past twenty five years.

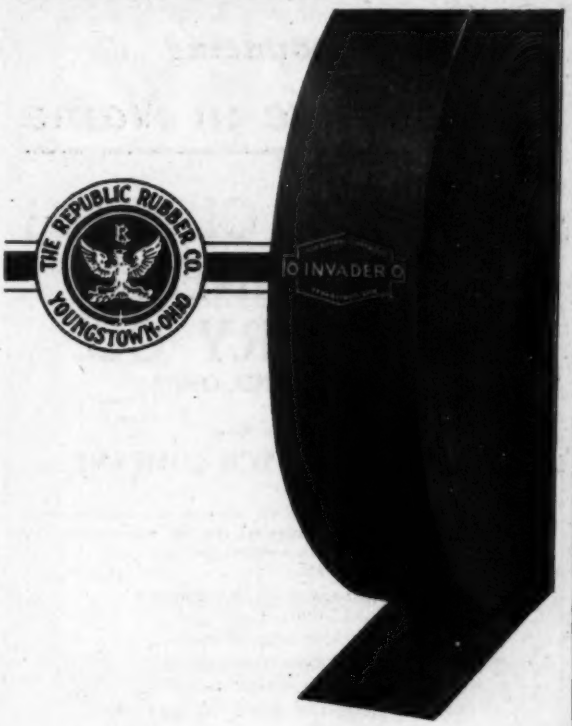
A new bleacher building is to be erected for the Oregon Pulp and Paper Mill at Salem, Oregon, which will be a three-story, reinforced concrete structure, 42x66 in dimensions, and will cost approximately $20,000. A 4,500 kilowatt transformer will be installed to take the place of the present 1,500 kilowatt transformer. The Oregon Pulp and Paper Company, which ranks high among the bigger paper manufacturing concerns of Oregon manufactures chiefly wrapping paper, glassine, grease proof papers and tissue paper.

A new unit to the Pioneer Paper Company, of Los Angeles, Cal., will be started at once, according to reports. The company intends to specialize in the manufacture of asphalt-saturated felt roll roofings and shingles, insulating, waterproofing and mulch papers. A new unit to the felt mill and roofing plant was completed less than two months ago at a cost of $1,250,000, but increased demand for the company's products on the Pacific Coast and in the Orient necessitates further construction at once.

The Stevens Paper Company, Inc., of New York City, is now located in new and larger offices on the thirty-ninth floor of the Metropolitan Life Building, 1 Madison avenue, New York. The company represents the Rhinelander Paper Company, of Rhinelander, Wis., among other companies, in the metropolitan district.

The Continental Paper and Bag Mills, Inc., have announced that they will move their head offices in New York City to the Pershing Square Building in West Forty-second street during the latter part of February.

Blake & Decker, Inc., paper distributors and mill agents, of New York City, have filed notice of a change in name to Marquardt, Blake & Decker, Inc., and their removal from 50 East Eleventh street to 419-421 Lafayette street, New York.



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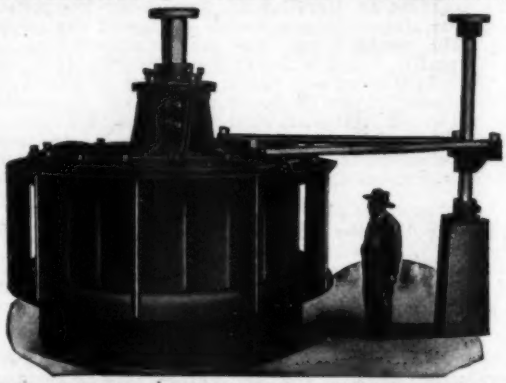

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Good Outlook for 1924

For the pulp and paper industry in Canada as a whole, the year 1923 has been one of considerable activity and expansion. For the first ten months of 1923, the Canadian exports exceeded those of 1922 by nearly one million dollars in value, while the exports of chemical pulp, for the same period, were of 447,000 tons, as compared with 335,000 for 1922. The production of news print by Canadian mills for the first eleven months of the year amounted to 1,166,225. When the December figures are obtainable, it will round up over 1,250,000 tons.

Last year, however, was not a good year for the other grades of paper such as book, bond, writing and wrapping, if compared with the news print figures, although they have all shown an appreciable improvement over 1922.

The trade outlook for 1924, in the pulp and paper industry, is encouraging and a steady activity is anticipated. The demand for news print will apparently be well maintained and the new increased production will be disposed of without creating any disturbance in the market.

Canadian News

February 1, 1924.

The Montreal Star recently had an editorial upon "Who Wants a Pulpwood Embargo?" The answer was not long to come. Mr. Barnjum, through his indefatigable campaign in favor of an embargo, having made a good many adherents, even in the Canadian press.

The Star itself gives partly the answer as follows:

"Here and there pulpwood dealers, jobbers and middlemen give evidence before the learned Commissioners, protesting almost with tears in their eyes that any restrictions on the exportation of unmanufactured pulpwood would mean the loss of thousands of dollars to their individual interests. Those important concerns which are dependent upon an uninterrupted and continuous supply of pulpwood, who see their stocks of raw material threatened, while the foreigner benefits, seem either indifferent to the Commission or unwelcome."

The main evidence so far in the hands of the Commission comes mostly from parties directly interested in the export of pulpwood. It has been contended, particularly by Mr. Barnjum, that the supporters of the statu quo were the only ones who had a fair chance of being heard before the Commission, because they were backed up by powerful interests, that they were advised by the best Canadian lawyers who were earning substantial retainers, while those advocating the enacting of an embargo were left to their resources.

The consensus of opinion inclines, however, upon the futility of the Pulpwood Commission, which is considered as utterly useless, costly, and to a great extent inexperienced; that it was merely created by the Dominion Government in order to shelve for a time the demand for an embargo which had been made for long years past.

While the King government has lost its lantern of Diogenes on this perplexing question, the leader of the opposition, Mr. Meighen, takes a determined stand. Discussing the threats of reprisals, he said that "there is no weapon in the hands of the United States that we need fear. There is not a reprisal they might attempt which would not inflict far more damage to them than to us."

Official earnings figures of the Belgo Canadian Paper Co., Ltd., for the six months ended December 31, 1923, show gross earnings for the period of $1,275,269, and net earnings at the rate of over 15 per cent per annum. The particular interest of these figures resides in the fact that it is the first report since the control of the company has passed into the hands of Canadian interests. It should be noted that since the beginning of January the company has increased its production by the addition of a new newsprint machine and of extra grinders that, at the present time, are producing 75 tons daily. This is the machine which was built by the Dominion Engineering Works, and is considered to be the last word in paper machine design and construction. The company is now producing at the rate of 360 to 380 tons a day, with the expectation of an eventual 400-ton output, as compared with an average daily production of about 300 tons during the period covered by the foregoing earnings statement. It is understood current earnings are much greater by reason of this increased production, and it is estimated they approximate 20 per cent on the common stock after all charges. Recent advices were to the effect that the company has sold its entire production for the current year.

On the evening of the 23rd of January the St. Maurice Paper Co. opened its new club house at Cap de la Madeleine,

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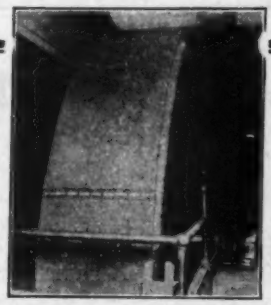

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Crescent Belt Fastener Co.
247 Park Ave., New York, N. Y.

Write your name and address on the margin of this ad and send to us. (5)

Tannite Deckle Straps for Fourdrinier Paper Machines

Represent the latest improvements. They are made to lie flat on the wire and run straight.

STOWE & WOODWARD COMPANY
The Rubber Roll Makers
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SACOLITE MILL WHITE — PYRAKOTE PAINT

PAINTS FOR PAPER AND PULP MILLS

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Explain your troubles to
STEWART-ADAMS & CO.
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PAPER AND PULP MILL PAINT SPECIALISTS

See Paper and Pulp Mill Catalogue

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You Can Say Good-Bye to Rust When You Paint with Bitumastic

FOR an enduring protection on stacks, boiler fronts, tanks, pipes and other metal surfaces, paint with Bitumastic Solution. It insures a bright, lasting finish.

WAILES DOVE-HERMISTON CORPORATION
17 Battery Place, New York
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P. Q., which was fittingly celebrated by over 500 officers, members of the staff and workmen. The clubhouse, a one-story building 100 feet by 70 feet, was designed by and erected under the supervision of J. A. Warner for the company. It is surrounded by a 10-foot veranda, and contains a 45 by 35-foot dancing hall, card room, ladies' room, smoking room and kitchen. The clubhouse is a gift from E. B. Murray, of the Union Bag and Paper Corporation of New York, and was erected at a cost of some $10,000. It is hoped by its means to still further strengthen the already splendid "esprit de corps" displayed by the personnel of the company, and it is confidently expected that the clubhouse will be fully taken advantage of by all connected with the mill.

The Fort Frances Pulp and Paper Co. has entered action at Osgoode Hall to recover from fourteen other pulp and paper companies the difference between the market price at the time and the Canadian fixed price for all news print paper supplied to Canadian newspaper publishers in excess of the plaintiff's proper proportion, during the years 1918-1919, when the price of news print was under government control. The defendants are: Spanish River Pulp and Paper Mills, Ontario Paper, J. R. Booth, E. B. Eddy, Abitibi Power and Paper, Brompton Pulp and Paper, Price Bros., St. Maurice Paper, Laurentide, Canadian Paper, Donnacona Paper, Newsprint Pulp and Paper, Belgo-Canadian Paper and Belgo-Canadian Pulp and Paper.

The Provincial Paper Mills, Ltd., will double the capacity of their groundwood plant at Port Arthur, Ont., increasing the output to forty tons a day. The Port Arthur Shipbuilding Co. has been given the contract for new wet machines, while the General Electric Co. will install the electric equipment. Contracts have been entered into for an additional supply of hydro-electric power amounting to 1,500 horsepower, which will be turned into the new department early in the spring. A considerable portion of the increased output will be used in the mills of the company at Thorold, Mille Roches and Georgetown, Ont.

The Montreal Section of the Society of Chemical Industry devoted the whole of their January meeting to the question of forest fire prevention. The subject was very ably discussed by Ellwood Wilson, Laurentide Co., Grand Mère, P. Q.; Robson Black, Canadian Forestry Association, and Professor Hosmer, Cornell University; and H. J. Vennes, Northern Electric Co., outlined the possibilities which lay in the use of radiotelephony as an adjunct in forest protection. All the addresses were broadcasted.

Announcement has been made by the St. Maurice Paper Co., Ltd., of an issue of capital stock of approximately $2,000,000 (bringing the total stock issued up to about $10,000,000), and of the probable issue of $2,500,000 or $3,000,000 of bonds. This financing is for the purpose of paying for the timber lands in the St. Maurice Valley, recently acquired from Union Bag and Paper Corporation, and for the installation of two additional newsprint machines for converting the surplus pulp now being manufactured.

The second large 230-inch machine of the Belgo company at Shawinigan Falls, P. Q., was started up on the 7th of January, and within a fortnight of that time it was turning out paper at the rate of 60 to 70 tons a day. It has a rated capacity of 75 tons; but it is expected that, like the first, which was installed about a year ago, when it is tuned up and running perfectly smoothly it will approach, if not reach, the 100-ton mark. The machine was built by the Dominion Engineering Works, Ltd., of Montreal.

The air is filled with talk of paper mergers of various groups of news print mills in Canada. The immediate proposal for a merger is limited to four mills which are located on the St. Maurice River. This merger, however, does not seem to be considered favorably by the Canadian press. They are not necessarily an unmixed blessing, nor, like some bank mergers, need they be recorded as an evil to which we must submit.

The Rothermere interests, who were successful bidders for a block of timber limits on the north shore of the St. Lawrence, have chosen to erect their mills within a few miles of Quebec City. The total capital to be invested in the operations will exceed $16,000,000. The larger part of the pulp to be manufactured, and later the news print, will be sent to England for use by the Rothermere group of newspapers.

EVEN with the first Appleton Jordan Engine to leave the shop—over a quarter of a century ago—there has been one outstanding feature of this jordan engine—Dependability.

It is their dependability that has convinced paper-makers relying on Appleton Jordans for the refining and brushing of their paper stock, that they had selected the right jordan.

It is because of their dependability that additional Appleton Jordans have been installed in mills that knew from experience the value of these jordans in the production of better paper.

The Appleton Jordan has proven its dependability to others, and we would be glad to send you more detailed information.

THE
APPLETON MACHINE
COMPANY

Designers and Builders of Paper Mill and Pulp Mill Machinery at
APPLETON, WISCONSIN

NORTHERN CRANES
NORTHERN ENGINEERING WORKS
DETROIT, MICH. U.S.A.

Steel Plate Construction
Steel Storage Tanks, Blast Furnaces, Gas Holders
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Steel Transmission Towers
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FOSTER SUPERHEATERS
A necessity for turbine protection, engine cylinder economy and utilization of superheat for all its benefits
POWER SPECIALTY COMPANY Boston, Philadelphia, Pittsburgh, Kansas City Chicago, San Francisco, Dallas, London, Eng. 111 Broadway, NEW YORK

Pickles' Patent
Automatic Steam Regulator
FOR
Paper Making Machines
Which absolutely control the drying of the sheet. Installed on sixty days' trial
W. F. PICKLES Buckland, Conn.

PUMPS
INDUSTRIAL—AGRICULTURAL—MUNICIPAL—RESIDENTIAL
A Type for Every Service
THE GOULDS MANUFACTURING COMPANY
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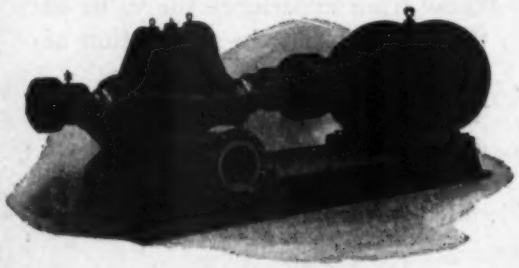
GOULDS

Aurora Centrifugal Pumps



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Aurora pumps are made in many types, to meet all conditions found in the paper mill field.

We specialize in horizontally and vertically split open and inclosed impeller, single and multi-stage and deep well turbine centrifugal pumps as well as deep well reciprocating pumps.

A card from you stating your conditions places our engineers at your service and results in a saving to you.

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Home Office and Factories, Aurora, Ill., U. S. A.

CENTRIFUGAL PUMPS
for

Water, Acid and Stock
Manufactured By
E. M. Cross Mach. Co.
BERLIN, N. H.

Two hundred bales of wheat, oats and flax straws were recently shipped from Winnipeg to Grenoble, France, for manufacture into pulp at the French School of Paper Making by the de Vains process. If the pulp proves suitable for the production of high grade papers and paper products, it is proposed to establish mills near Winnipeg that will produce from 50 to 100 tons of paper daily.

The annual statement of the Dryden Paper Co., Ltd., for the year ended September 30, 1923, which has recently been forwarded to the shareholders shows an operating deficit of $233,998. For some time the company has been operated under the direction of Messrs. Perry and Sabbaton as receivers.

The St. Regis Company, whose headquarters is at Watertown, N. Y., will build a new $4,000,000 mill on the St. Lawrence River, about eight miles from Quebec, Canada. The capacity of the mill at first will be 100 tons daily, but this will be increased to 1,000 tons as conditions warrant.

The Cape Magdalen Pulp and Lumber Co., Ltd., has recently been incorporated with capital of $2,000,000 and head office in Montreal.

The Orono Pulp & Paper Co. elected the following officers for 1924 at its annual meeting in January: President, Franklin E. Bragg; vice-president. F. W. Adams; treasurer, G. E. Crafts; clerk, W. L. Head; directors, Charles H. Wood, Walter L. Head. F. E. Bragg, F. W. Adams, G. E. Crafts, P. B. Palmer, H. W. Libbey, C. C. Stetson and W. W. Palmer.

The Publicity Paper Corporation has moved from 1476 Broadway to 406 West Thirty-first street, New York. The company are large importers and dealers in paper.

News Personals

George E. Bardeen

George E. Bardeen, 74 years old, died at his winter home in St. Petersburg, Florida, on January 26th.

Mr. Bardeen had not been at all well for several years. Naturally very active and energetic, he was forced into retirement by ill health.

He was born in Fitchburg, Mass., November 10, 1850, and while he was still a young lad, he worked under his stepfather, Samuel A. Gibson, who was president and general manager of the Kalamazoo Paper Co. Mr. Bardeen rose to the position of secretary of the concern, and in 1887 he resigned and organized th Bardeen Paper Company of Otsego. Under his able managerment, it grew to a very marked degree, till, when it was taken over by the Allied Paper Mills in 1922, it comprised two book mills and a coating mill.

In addition to the active management of his own business, Mr. Bardeen was also a leading figure in numerous other organizations in Kalamazoo and is widely known to the paper industry.

The immediate members of his family surviving are: A widow, a daughter, Mrs. M. B. McClellan, of Otsego; a son, George Edward Bardeen, Jr., of Kansas City; a brother, Charles Bardeen, Syracuse, N. Y.; four grand children, and two half-sisters, Mrs. F. M. Hodge and Mrs. F. D. Haskell, both of Kalamazoo.

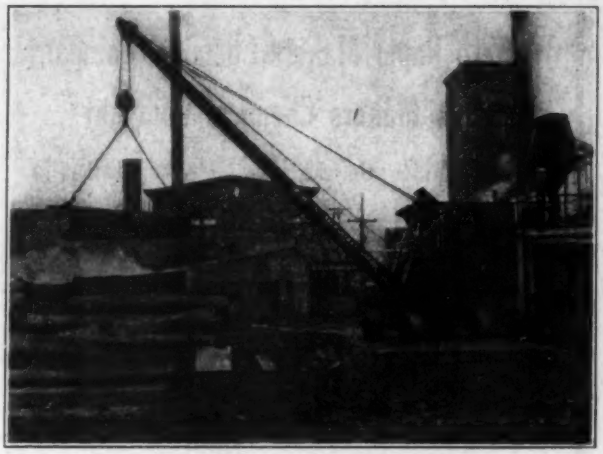
Peter King

News arrived in Kalamazoo of the death of Peter King, 54 years, of Tacoma, Washington. Mr. King was very popular around Kalamazoo, and has for many years enjoyed a large circle of friends in Kalamazoo.

Mr. King was formerly superintendent of the Monarch Paper Co., leaving that position to sell windstocks, a patented defibering and deinking machine for the use in the old paper system of a paper mill. At the time of his death, Mr. King was western representative for the International Time Clock Recording Co. Mr. King died on January 18th from cancer of the stomach.

Edward H. Haskell

Edward H. Haskell, whose greatest achievement will probably be judged by his joint founding with Garret Schenck of the Great Northern Paper Co., died at Pasadena, Cal., on January 8, after a short illness from pneumonia. He had made a trip to the northwest, caught a heavy cold, and gone to Pasadena to recover, but pneumonia set in shortly after his arrival.



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Specially Built to Suit the Capacity of Your Mill

The cost of handling pulpwood and logs is surprisingly low when you use a crane that is designed especially for your mill.

To buy a machine simply because the manufacturer builds only a certain size is poor economy. Our cranes range in capacity from 5 tons to 50 tons and are designed for handling small pulpwood with a grapple or single logs weighing up to 10 tons.

They are mounted for traveling on railroad track or on the ground surface and may be equipped with either electric, gasoline or steam power.

It will pay you to investigate. Our bulletin 241 is interesting and is sent free on application.

ORTON & STEINBRENNER

Crane Builders

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Western Paper Makers Chemical Company

Paper Makers Chemical Company

Kalamazoo, Mich. Holyoke, Mass. Easton, Pa.
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Rosin Size, Satin White, Clays, Fillers
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Standard Quality
Lowest Prices

The Casein Manufacturing Company

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AMERICAN AND ENGLISH **CHINA CLAYS** OF THE HIGHEST QUALITY

UNITED CLAY MINES CORPORATION

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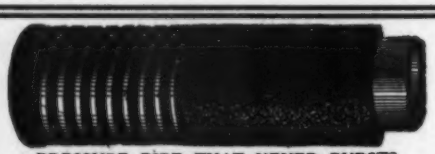

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The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for Paper Stock and Acids that can be obtained.

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"MICHIGAN" Combination Steel and Wood Pipe

LONG DISTANCE CONVEYOR OF WATER AND PAPER STOCK IN PAPER AND PULP MILLS—Specially Adapted to Carry Sulphite, Ground Wood and "White Water"

Eighteen reasons why you should use "Michigan" combination steel and wood pipe

1—Durability of Wood Shell. 2—Sanitary. 3—20% more capacity than Cast Iron Pipe. 4—Simplicity in handling. 5—Light in weight. 6—Speed in laying. 7—Protects against freezing. 8—Not affected by Electrolysis. 9—Rigid inspection of materials. 10—Efficient construction of stave. 11—Strength of steel banding. 12—Protection of banding with asphalt coating. 13—Cannot burst under pressure. 14—Can be laid in a wet trench. 15—Short curves without specials. 16—Low installation and maintenance cost. 17—Responsibility of company. 18—Not affected by sulphur or chemical solutions.

THE MICHIGAN PIPE COMPANY

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Boston, Mass.....Room 737, Oliver Bldg.
Cleveland, Ohio.....919 Ulmer Bldg.
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Philadelphia, Pa.....318 Widener Bldg.
Pittsburgh, Pa.....323 Fulton Bldg.

"Steel for Strength—Wood for Durability"

Francis L. Andrews

Francis Loring Andrews, president of the Andrews Paper Co., of Boston, and well known in the manufacturing trade, died at his home in Lynn, Mass., on Tuesday, January 15. He had been connected with the trade for over fifty years, and president of the Andrews Paper Co. since its incorporation in 1906.

Jacob Erichsen, who for nearly two years has been serving as secretary of several of the smaller associations in the paper industry, such as the Gummed, Glazed and Fancy Binders Board Manufacturers' Associations, has resigned to take effect Jan. 15, when he goes with Atterbury & McKelvey, to engage in the sale of Scandinavian pulp. The various associations have decided not to name a successor at once, but have asked the American Paper and Pulp Association to handle the work for them until the general convention of the paper associations early in April. Mr. Erichsen has had offices with the American Paper and Pulp Association and has been successful in developing some valuable phases of co-operative activity on behalf of the groups which he has served.

A. H. Campbell, traffic manager of the International Paper Company with headquarters in New York City, and one of the traffic men asked to represent the American Paper and Pulp Association at the January 3 organization meeting of a Shippers' Regional Advisory Board for the Middle Atlantic States, has been asked to serve as chairman of the paper and pulp committee of the new organization. The function of the board will be to supply the railroads with accurate information concerning carload requirements of shippers in the district and to co-operate with the railroads to secure adequate service.

David Steinhardt and Byrne Budd were appointed receivers for the American Woodpulp Corporation, importers of and dealers in wood pulp, of 347 Madison avenue, New York, on January 16, following the filing of a petition in bankruptcy against the company by three small creditors. No statement was made concerning the liabilities and assets of the corporation.

Jacob Erichsen, who for the last two years has acted as secretary of several paper trade associations allied with the American Paper and Pulp Association, including the Gummed, Glazed and Fancy and Binders Board Manufacturers' Associations, became associated on January 15 with Atterbury & McKelvey, of 145 Nassau street, New York, in the wood pulp department of that concern.

William H. Kraske, who has been sulphite superintendent of Consolidated Water Power & Paper Co.'s Wisconsin Rapids, Wis., mill since it was built in 1920, has gone to Kapuskasing, Ont., to be connected with the Spruce Falls Co., Ltd., the Canadian branch of Kimberly-Clark Co. The Kapuskasing mill has a capacity of 120 tons per day of easy bleaching sulphite.

Nathan Leshner, of the Leshner Paper Stock Company, Lockland, Ohio, returned from Europe on the steamer Aquitania, arriving at New York on January 23. Also on the same steamer returning from a business trip abroad was I. Klous, of the Stone Bros. & Victor Galaup Company, of New York City, importers of papermaking rags.

Joseph Reichlen, formerly representative in Philadelphia for the McLaurin-Jones Company, paper manufacturers of Brookfield, Mass., is now with the Mead, Patton & Company, Inc., wood pulp importers and dealers, of 342 Madison avenue, New York.

William A. Castle has been elected president and treasurer of the recently organized corporation of Castle & Overton, Inc., dealers in and importers of all kinds of papermaking material of 200 Fifth avenue, New York. Frank C. Overton was elected vice-president, and Carlton B. Overton secretary.

Andrew Ragone is now managing the rag and waste paper department of Atterbury & McKelvey, of 145 Nassau street, New York, succeeding J. J. Spinnelli, who resigned at the first of the year. Mr. Ragone is president of the Andrew Ragone Company, Inc., of New York, and is widely known in paper stock trade circles.

Frederick H. Chase, formerly of Chase & Norton, Inc., packers of waste paper of 275 Water street, New York, which firm has been liquidated, is now associated with Daniel M.

Starch

THE extensive list of the several varieties of

STARCH

manufactured by us and used by the most progressive manufacturers shows that our efforts in studying and meeting the needs of the industry have received gratifying recognition.

FOX HEAD NIAGARA SPECIAL PAPER

are the starches specially designed for Top-sizing, Beater-sizing and Pasting.

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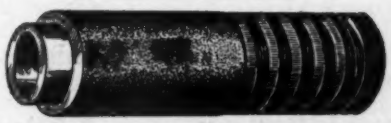
Starch

Standard Wood Pipe

"The Pipe that Stands the Test"



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Used extensively by the Paper Industry for conveying paper stock and acids. Especially adapted for conveying sulphite and ground wood.

Has greater carrying capacity than iron pipe, costs less to install and much less liable to freeze than any other type pipe.

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Standard Wood Pipe Co.
Williamsport, Penna., U. S. A.

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For removing Mud—Turbidity, Etc.

Vertical Rapid Sand Filter for removing sediment, etc.

Rapid Sand Filters
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Write for Bulletin 105, containing valuable information on filtration methods.

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60 KINDS—

Pressure Regulators
Pump Governors
Non-return Stop Valves
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OUR NEW CATALOG—1924 Edition —No. 50 will be mailed on request. It's worth asking for.

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America's Famous Coal Crusher

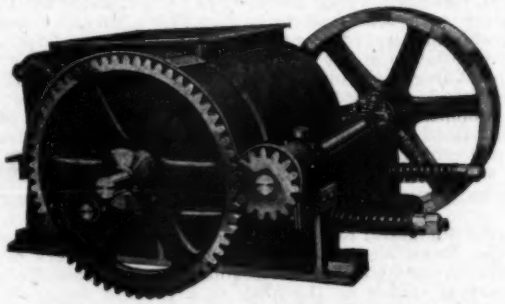
Gruendler Swing-Hammer Crushers are fast replacing all other types of crushers. Handles mine run of coal and reduces to fine uniform product for feeding stokers or for powdered fuel.

Tramp Iron or Foreign Material has no effect on a Gruendler.

We have replaced roll crushers in American Paper Products Co., Carthage, Ind., and many other mills.

Write for Circular

Gruendler Patent Crusher and Pulverizer Co.
938 North 1st Street St. Louis, Mo.
Sales Offices in All Principal Cities



A Webster Coal Crusher in Your Power Plant

will insure a regular supply of properly sized coal for your automatic stokers at a low cost per ton.

They are built in single and double roll types, in capacities to handle 30 to 200 tons per hour.

Shall we send you our catalog showing our various types and sizes of coal crushers?

THE WEBSTER MFG. CO.
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Factories, Tiffin, O., & Chicago. Sales Offices in Principal Cities.

WE-FU-GO AND SCAIFE WATER

PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES

WM. B. SCAIFE & SONS CO., PITTSBURGH, PA.

Hicks, Inc., importers and dealers in papermakers' supplies of 200 Fifth avenue, New York.

Edmund E. Keough has resigned as advertising manager of the American Writing Paper Company to become sales promotion manager of the Paper Utilities Company, of New York City, manufacturers of Tulip drinking cups and other paper specialties.

G. W. Blanco has severed his connections with the Forest Products Laboratory, Madison, Wis. He has accepted the position of chief chemist for the Riordon Pulp Corporation, Ltd., Hawkesbury, Ont.

Maurice London, of the Lagerloef Trading Company, Inc., wood pulp importers of 52 Vanderbilt avenue, New York City, sailed January 7 on the steamer Kungsholm for Gothenburg to spend a few weeks in Scandinavia on business.

Robert Reed, formerly Ohio representative of the American Woodpulp Corporation, of New York, is now associated with the sales force of the wood pulp department of the Perkins-Goodwin Company, Aeolian Building, New York City.

Sheldon E. Wardwell has been elected a director of the Great Northern Paper Co. to fill the vacancy made by the death of E. W. Haskell.

Foreign Correspondence

European Paper Industry at the End of 1923

The favorable times when Germany was able to undersell nearly all countries in practically every branch of industry has come to an end. As regards paper, the inland consumption has diminished remarkably for every kind except such as used for banknotes and their substitutes. The Reichsbank and a number of private banks, also printing shops employed by the former, ordered enormous quantities for the manufacture of thousand, million, milliard and billion banknotes at last, also for the so called Rentenmark or Goldmark, actual stabile money worth as gold although printed on paper. The enormous scarcity of all kinds of banknotes, in spite of the fact that the Imperial Printing Office at Berlin and several dozen of private ones work at full steam day and night to meet the incredible amount, caused hundreds of firms to print their own Notgeld or emergency bonds, the latter being accepted only in a particular town or province. During the last three months of the past year we have never seen such a variety of banknotes. The philatelist and collector had a marvelous chance for his passion. Thus trainloads of paper were consumed for this, and a few weeks later much of the emergency bonds and the lower kinds of banknotes disappeared, as the depreciation of the nominal amount shown on the face became too excessive. Merchants and banks refused to accept thousand mark banknotes in the summer, as it was too cumbersome to count them all through, in September the notes showing a million or five or ten million, etc., suffered the same fate for the same reason; the milliard banknotes followed in their turn, so that at the end of the year only billion notes were in general course, one billion papermark being equal to one Goldmark or about ¼ dollar. At the end of the year all banknotes showing amounts of 1, 2, 5, 10, 20, 100 thousand marks are worth less than the raw material of the paper consumed for it. If you take a million sheets each worth nominally 1,000 marks, their total amount is 1,000 million marks, or one milliard, but the rag dealer will give you many times more than that. Shortly before Christmas the Goldmark appeared and gradually displaced all other kinds of money, for the former state of affairs had become unbearable. It meant a remarkable saving of paper and of printing expenses. The same applies to postage stamps which were in use only for a week or two since the lower values showing nominally a few thousand marks on the face, or later a few millions, could not be used when the postage ran up into many milliards. The size of letters and postcards would have to be as large as carpets if we would have used thousand mark stamps, etc., for postage.

Of all the other paper made throughout the empire only one tenth was consumed at home while 90 per cent was exported. This seemed to be an advantage as such large export orders brought much foreign capital into the impoverished country which needed it so much for food, coal and raw material; as a matter of fact the world's prices were at the end of last year lower than the German inland prices, the feared dumping had entirely ceased and the

Unloading Coal for Three Cents a Ton

Quite a number of paper mills in the country unload and store their coal with a **Godfrey Conveyor.**

The coal that has to be placed in outside storage is later reclaimed with the same equipment and ashes are also removed from the boiler room by means of the **Godfrey.**

The operation of the **Godfrey Conveyor** is very simple. Coal and similar materials flow from hopper bottom cars, through a narrow track chute, into the conveying bucket, and are raised and carried to bins, boiler room or outside storage. When the bucket reaches the desired point of unloading, it comes in contact with a trip which causes it to divide in the center and discharge its contents. It automatically closes, when lowered into the pit for refilling.

One man, stationed at the hoist alongside the pit controls the entire operation. The power and labor cost is from three to seven cents a ton, depending upon the distance carried. It usually requires an hour and a half to unload and store a fifty-ton car of coal.

The great saving effected with this equipment will be at once evident to paper mill executives who are familiar with their present cost of handling. If you will send a blue print or rough pencil sketch of your power plant, showing location of siding and storage space, we will quickly show you just how the **Godfrey** will serve you and tell you what it will cost.

Ask for Bulletin A-1

Godfrey Conveyor Company
Elkhart, Indiana

Godfrey CONVEYOR

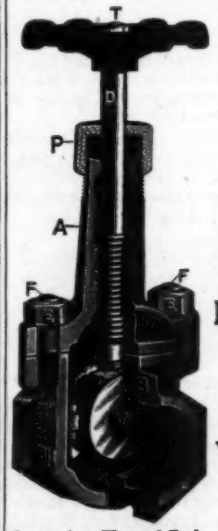
Buying valve economy

DAVIS VALVES are designed to be economical with their user's money and material — economical with mechanic's time for repair and upkeep, and economical with the steam, water, gas or oil they regulate.

The wisdom of installing valves of proven ability, Davis valves, with almost a half century of valve-building behind them, is explained in the Davis Catalog. Send the coupon to the G. M. Davis Regulator Co., 414 Milwaukee Ave., Chicago, for your copy. It will prove to be a valuable valve handbook.

Balance Valves
Fluid Control Valves
Exhaust Relief Valves
Stop and Check Valves
Pump Governors
Flow Regulators
Float Valves
Back Pressure Valves
Water Relief Valves
Steam Traps
Emergency Stop Valves
Non-Return Valves

Iron Body or All Iron
"Pilot" Gate Valves
WITH OUTSIDE SCREW STEM AND YOKE



Screwed or Flanged Ends
Working Pressure
Up to 125 Pounds

Especially Adapted for Handling
ACIDS, ALKALIS & CORROSIVE SOLUTIONS.

Order
POWELL VALVES
from your dealer

Write for Descriptive Circular

THE WM. POWELL CO.
CINCINNATI, OHIO

Made for maximum service
not merely the average

TRADE JENKINS MARK
Jenkins Bros

Two ways to tell *Genuine Jenkins*

Fig. 323, Screwed, Standard Iron Body Gate Valve

You can be sure of GENUINE Jenkins Valves in two ways:

First, by the Jenkins "diamond and signature" cast on the body.

Second, by the years of satisfactory service which they give.

To provide genuine Jenkins Service, be sure to order GENUINE Jenkins Valves. Know them by the "diamond and signature."

Valves in bronze, iron, and steel for all requirements. At supply houses everywhere.

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German manufacturer had practically no profit on such foreign orders, as the manufacturing expenses had become excessive. The exports to England increased more than those to other countries.

In the occupied zone nearly all industries had received a death blow owing to the French occupation of the Ruhr, the papermills did not make an exception. Only very few are still open but they work with reduced hours. The latter is done merely to prevent the starvation of workers and to prevent interruption of the business with old customers at home and abroad. The manufacturing costs in the Ruhr and Rhine are much higher than elsewhere in the empire for various reasons. The cost of living is and has always been the highest even before the war, consequently the wages are high. The French demand a heavy fee for all goods leaving this zone whether going abroad or into unoccupied Germany. This levy is 6 per cent of the value. For imported raw material also a custom charge is taken by the French.

Austria

At the general meeting of the Austrian paper and cardboard manufacturers at the end of the past year, several reports were given by eminent manufacturers which give a good insight into the situation. A number of mistakes made there after the war are being repeated again, and at a greater extent. The paper production diminished from the middle of 1922 and at the beginning of 1923 was only about half as much as that six months ago, viz., 900 railway vans per month. The vans in Europe are about two-thirds the size of an American car. The stabilization of the krone (crown) diminished the exports and the inland consumption; only in the spring did business revive a bit. The low world market prices allowed only a very modest profit, and it was much regretted that in spite of the stabile money, the wages rose and rendered the goods dearer. Besides a sales tax was introduced, other rates and taxes increased, and for exports a special heavy fee was charged after the German example. Thus it happened that Austria manufactured at higher expenses than foreign countries. By the exerting of all forces and great economy, a cheapening was tried at any rate and to sell as much as possible to foreign markets. In the first half of 1923, 57 percent of the Austrian paper production and 60 percent of cardboard was placed on foreign markets where the prices were fixed, thus only a very small profit was left. In Germany the situation was similar. The closing of factories had to be avoided as much as possible, and there were many losses of substance. The new Trade Agreements with France and Italy had favored the export to those countries, but these were not sufficient substitutes for the lost markets, caused by the Versailles and other treaties. Thus Austria is forced to send much paper, etc., to oversea countries where she has to adapt herself to the wishes of the world market. Thus a number of mills have introduced new never before tried qualities for which hitherto there was no market at home. This necessitates some technical changes and of course much capital which is very scarce there. Only at the end of 1923 the situation improved a little, the coal prices dropped, few other expenses too, and allowed a cheaper production. It does not apply to colored paper since the prices for aniline dyes increased. The German competition also became less felt; some German merchants have purchased Austrian paper in order to re-export it. The dry summer was not favorable to the Austrian mills of which many are driven by waterpower. At the end of the year the paper prices rose about 10 percent, including the wages and raw material. The increase is most felt with the rotation printing paper, viz., 4,330 crowns per kilogram, which is 30 Goldheller, while in 1914 it was 21 Goldheller. The publishers of newspaper are much hit and have approached the government for help. The price of daily papers was subsequently raised. A further loss is suffered by the publishers owing to much increased postal charges for bookpost. The paper mills are trying to eliminate the wholesalers and have undertaken to furnish small buyers. Among the wholesale traders many dishonest elements had crept in during and after the war, which spoiled their reputation. With the elimination of the intermediate wholesale trade, the finished products become cheaper.

Switzerland

About 17 real paper mills exist there, employing wholly 40 machines. Switzerland is able to produce 80 millions kilogram per year; this is 25 millions more than before the war. This increase is quite astonishing. Certain circles endeavored after the war to purchase their material through co-operative organizations and the Eika (purchase bureau of the paper and related industry) was founded. But this concern developed gradually to a manufacturing company and induced their large factories to enlarge their plants. Thus the production was increased to the above figures. For these 80 millions kg. a sufficient market was not found at home, but in a measure now the economical crisis has diminished and they hope to sell up to 65 millions kg. paper at home. During the years 1910-14 the average yearly export was 900,000 kg., comprising paper and cardboard, and rose enormously during and after the war. There were also some imports since the end of the war from Germany, Austria and France.

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New York, February 1, 1924.

SINCE the outset of the new year demand for paper of most kinds has developed rather slowly. Consumers have been noticeably cautious in their buying and have mostly limited orders to supplies immediately and directly needed, yet with the quieting influence of the holiday period over and with business generally getting back into a normal stride, the call for paper is showing gradual expansion.

The market is in a healthy position. Stocks of paper at mills, in jobbers' establishments and in the hands of converters and consumers are smaller than usual, judging from such statistics as are available. Buying of paper for some months past has been strictly in accordance with the requirements of users and distributors, and it goes without saying that under the circumstances demand for paper should show prompt improvement as quickly as needs in the consuming industries increase. This is just what is happening at present. General business is on the mend; there is nothing in any of the basic industries of the nation which could be taken to mean that a boom exists or is in process of developing, but on the other hand the movement of commodities and merchandise is steady and of fairly broad proportions and is showing a slow though consistent expansion, and the result is that consumers are finding their paper requirements broadening so that they are obliged to increase the volume of their orders placed with jobbers or mills.

Advertising, as is well known, is a highly important factor to the paper industry. Big advertising campaigns mean heavy consumption of paper of several kinds—newsprint, book paper and fine papers. The outlook for a tremendous advertising year in 1924 is indeed bright. Newspapers of the country are today carrying probably a larger volume of advertising than ever in their history, and the advertising movement is spreading to other publications, notably the magazines, trade journals and other periodicals, as well as to mail campaigns. This is leading to a steady increase in consumption of such papers as book, bond, ledger, etc., and there seems every reason to expect a much broader demand for these papers in the present year than was encountered in 1923.

There is some complaint registered over prevailing market conditions. Manufacturers say there is not a broad enough outlet to warrant anything approaching full production of many kinds of paper, jobbers criticise the small volume of orders from printers and other consumers, and competition among producers and dealers is so keen as to create some price easiness. This state of affair is of course logical and to be expected. Demand for paper, viewed as a whole, does not measure up to the productive capacity of the mills of the country, nor is it likely to in the near future. The sooner manufacturers fully appreciate this the better it will prove for the industry at large. It must be realized that mills can turn out by far a larger tonnage of paper of each and every kind than the country requires under normal business conditions. It consequently behooves paper producers to regulate their output accordingly so as not to weaken their market against themselves. Paper demand today is normal and better—in point of volume. Taking everything into consideration, it is far above pre-war normal, but still it is not of sufficient volume to justify maximum production. If manufacturers base their prices on an actual cost and profit scale and firmly stick to the prices quoted out to customers, they are scheduled, it would certainly appear from prevailing conditions, to enjoy a busy and prosperous year in 1924, but if production is permitted to run rampant and price-slashing is indulged in to market all the surplus paper produced the year is not likely to be very prosperous.

As forecasted, a new high record of newsprint production was established on the North American Continent in 1923. Mills in the United States and Canada manufactured a total of 2,824,000 tons of newsprint last year, according to preliminary figures, surpassing by 218,000 tons or nearly nine per cent the previous high mark of 2,530,000 tons in 1920. United States manufacturers made a total of 1,485,000 tons of newsprint last year, exceeding by about three per cent the 1922 output of 1,448,000 tons, and constituting the largest production of print paper ever recorded in this country with the single exception of the year 1920 when 1,512,000 tons were manufactured. During 1923 Canada continued to increase her production of newsprint and turned out a total of 1,263,000 tons, establishing a new record, being about 17 per cent greater than the 1,082,000 tons made in 1922, and 56 per cent above the 808,000 tons produced in 1921.

As production figures suggest, consumption of newsprint in the United States reached a new high level in 1923, being approximately 15 per cent more than in 1922 and 28 per cent more than in 1921. Adding imports to domestic production and deducting the small amount of exports, there were 50 pounds per capita of newsprint available for consumption in the United States in 1923, compared with 15 pounds in 1900. Canada marketed over 80 per cent of her output in the United States, while Scandinavia, Finland and Germany sent some 200,000 tons to this country last year, against 133,000 tons in 1922 and 135,000 tons in 1921.

Advertising as usual was an important factor in determining the quantity of newsprint used in the United States in 1923, but influential also were the large sizes of the daily and Sunday issues and the growth in circulation. There are some 60 newspapers in the country having a circulation in excess of 100,000 copies, and in 1923 these dailies averaged 27 pages and the Sunday issues averaged 101 pages—sizes never before attained. There are more than 22,000 newspapers in the United States and Canada of which some 18,000 are monthlies and country weeklies, while the circulation of the 2,000-odd English language dailies is approximately 31,000,000 for the weekday issues and 21,000,000 for the Sunday issues. There is now a copy of a daily paper published for every family in the United States and Canada. The total volume of advertising in newspapers in the leading cities of the United States showed an increase in 1923 over 1922 of seven percent, and of two per cent over the 1920 record figure.

Newsprint is in a strong market position. The movement from mills to contract customers is steady, and transient demand is developing in good volume. In fact, it is no easy matter for publishers to locate spot supplies of sizeable tonnage, most mills being sold up well ahead.

Book paper demand is gradually increasing, and late reports from manufacturing centers tell of mills speeding up their production. Machine finished book paper is quoted at around 6.25 cents a pound f.o.b. New York, with slightly lower prices named in some cases, while coated book paper is quoted at 8 cents upward, depending on quality and tonnage, f.o.b. New York.

Fine papers are in better call than in several months. Mills in New England are receiving more orders and of larger volume, and prices display an advancing trend, due in part to the rising cost of raw material. Tissues are quotably steady and in fair movement. Coarse papers are rather easy in price, this being blamed in large part to kraft paper manufacturers in the South quoting low figures, and also to competition of foreign coarse papers. No. 1 domestic kraft wrapping is quoted at about 6 cents a pound f.o.b. New York, and the No. 2 grade at 5.25 cents. Cheaper prices obtain in some quarters.

Box boards are beginning to move in larger amounts, with the spring season nearing. Quotations generally range around $50 a ton f.o.b. New York for filled news board, and $45 for plain chip board. Other grades of board are relatively firmer in price than these descriptions which are chiefly consumed in the manufacture of set-up paper boxes.

Work of a joint committee representing the American Paper and Pulp Association, the Technical Association of the Pulp and Paper Industry, and the Association of American Wood Pulp Importers for the listing of approved chemists for weighing, sampling and testing pulp has progressed so far that the various forms for use in this work have been completed. A detailed statement of experience and qualifications is prepared for the chemists who wish to be rated as approved chemists for the joint committee, and a set of instructions for the chemists to follow in making tests has been completed. The chemists must also be approved by the Scandinavian wood pulp associations,

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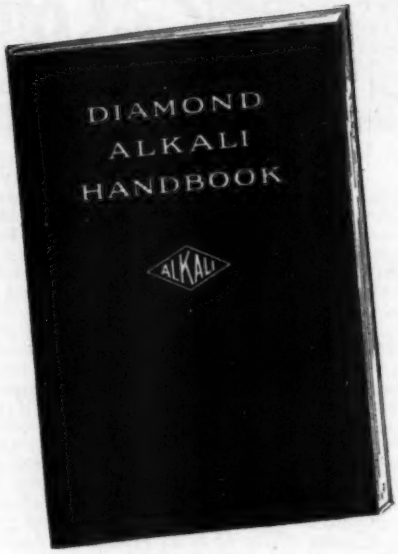

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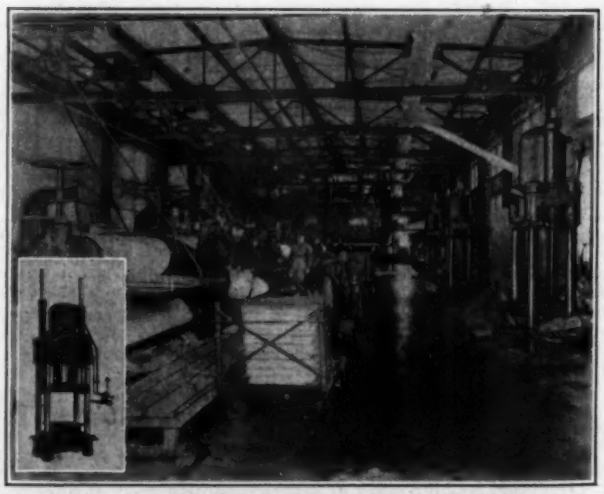

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Domestic Raw Materials

Papermaking Rags

Conditions existing in the papermaking rag market might well be described as bordering onto a boom. As a matter of fact, actually boom conditions characterize some kinds of rags. There is a keen and broad demand from consuming quarters and prices have advanced during the past month with rapidity seldom before witnessed until market levels at present represent—in some cases—a rise of more than 100 per cent from the low prices prevailing in the late summer of 1923.

From all indications, there are two major factors in the strengthening position of rag stock. One of these is the high price of raw cotton and the consequent big increase in the use of rags as a substitute, not only in the United States but more especially in the various countries of Europe. The other important factor leading to the sharp advance in rag values is the situation existing in the roofing felt industry. Not in a long time, certainly not since the war period or the boom which shortly followed the world conflict, has the roofing paper market been so active as during the last few weeks. Ordinarily the movement of roofing felt toward consumption drops off to almost nothing during the winter; this is logically to be expected owing to the decline in consumption while unfavorable weather prevents building construction. This winter thus far has been an open winter, however; building operations have kept on almost without any interruption in most parts of the country, while large orders have been received by mills for roofing felt and building papers for export, particularly to Japan, and the consumption of rags has, from visible signs, exceeded that of any winter in the history of the roofing paper industry.

It is the custom for roofing paper mills to curtail production along about December 1 to not more than 50 per cent of their capacity. In some cases operations are diminished to even below this percentage basis, for the simple reason that there isn't the demand for such papers in the winter. This season the situation has been just opposite to that usually noted. Instead of dropping off, demand for roofing and sheathing papers increased to a pronounced degree early in the winter and has been holding up in a surprising way ever since, with manufacturers booked ahead and with consumers showing no let-down in their buying. Added to the heavy domestic consumption of roofing felts, orders were placed for large amounts of building papers and prepared roofing by Japan following the earthquake in that country, and the export movement in other directions has been above normal.

The demand for rags for roofing mills consequently has been running close to record proportions, if not establishing some new records. Not only have consumers almost cleared the domestic market of this class of rags but they have also bought heavily in Europe, so heavily, in fact, that latest reports assert stocks on the other side of the Atlantic are lower than they have been since prior to the war and that dealers there are cautious about entering further selling engagements and are insistent on stiff prices.

The excessive price of raw cotton has led to a large increase in the use of rag stock as a substitute for cotton. Shoddy, breaking up, mattress material and other mills have been and are still experiencing a broad demand for their products and are consuming rags in large volume, which means of course that so much supply is removed as raw material for paper mills. There has been, in addition, a marked increase in export shipments of many grades of rags for cotton substitute purposes to Europe, especially to Germany.

The situation in the lower qualities of rag stock has reached the point where buyers are granting very high prices to cover their wants. Sales of No. 1 roofing rags have been made in the East at 2.50 cents a pound f.o.b. New York, and of No. 2 packing at 2.25 cents and higher at shipping points. Foreign dark colored cottons have brought 2.15 cents and more ex dock New York in sales to mills. The sharp rise in prices of these rags has carried nearly all other grades upward with it, and a very firm tone marks thirds and blues, old white rags and the various descriptions of new cuttings.

Repacked thirds and blues are quoted at about 3.50 cents per pound f.o.b. dealers' shipping points, and rough packing of blues has sold at 2.75 cents and higher, depending on the quality of the rags. Old No. 1 repacked whites are fetching 7.25 cents a pound upward at shipping points, and No. 2 repacked 4.50 cents and higher.

No. 1 white shirt cuttings are quoted at 14 to 15 cents a pound f.o.b. New York, with some dealers asking above these rates. Blue overall cuttings have moved up in price to 9.25 cents a pound and higher, while unbleached muslins are quoted at 12.50 cents a pound at shipping points, washables at 5.50 cents, light silesias at 9.50 cents, fancy shirt cuttings at 7.50 cents and black silesias at 5.75 cents.

All grades of foreign rags are in good demand and are gradually advancing in prices. Moreover, importers say they are having difficulty in securing usual supplies abroad, reflecting the heavy movement into consuming channels in recent months.

Average quotations f.o.b. shipping points and ex dock, some of which are more or less nominal, follow:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	14.00-15.00
White shirt cuttings, No. 2	6.75- 7.25
Fancy shirt cuttings	7.25- 7.75
Washables, No. 1	5.50- 5.75
Unbleached muslins	12.25-12.75
White lawns	11.50-12.00
Overall cuttings, blue	9.25- 9.50
Black silesias	5.50- 5.75
Light flannelettes	10.00-10.50
Canton flannels, bleached	11.75-12.00
Canton flannels, unbleached	11.25-11.50
Shoe cuttings, bleached	10.00-10.25
Shoe cuttings, unbleached	9.00- 9.25
Light silesias	9.50- 9.75
O. D. khaki cuttings	5.50- 5.75
Mixed khaki cuttings	5.00- 5.25
Corduroy cuttings	4.00- 4.25
Cottonade cuttings	4.50- 4.75
Linens, No. 1 white, foreign	16.00-17.00
Light prints, foreign	6.50- 7.00
Old Stock—	
Whites, No. 1, repacked	7.25- 8.00
Whites, No. 2, repacked	4.50- 5.00
Whites, house soiled	3.60- 3.75
Whites, street soiled	3.25- 3.50
Lace curtains	4.75- 5.00
Thirds and blues, rough	2.70- 2.90
Thirds and blues, repacked	3.25- 3.50
Black stockings	3.75- 4.00
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	6.50- 7.00
Roofing, No. 1	2.40- 2.60
Roofing, No. 2	2.20- 2.40
Dark colored cottons, foreign	2.10- 2.25
Blue linens, foreign	5.00- 5.50
Gray linens, foreign	6.50- 7.00
White linens, foreign	11.00-11.50
Light prints, foreign	4.00- 4.25

Rope and Bagging

There is a steady demand for old rope and bagging and the trend of prices of these papermaking materials is in an upward direction. Changes of importance have involved, in the main, specific grades of stock on which runs of demand have been recorded, but the market tone generally is firm with conditions in favor of sellers.

Old rope is selling freely at prices ranging from 6.50 to 6.75 cents per pound f.o.b. shipping points for No. 1 domestic manila rope, and around 6.25 cents ex dock New York or other American Atlantic ports for No. 1 foreign manila rope. Paper mills are absorbing rope in good amounts, and indications point to dealers and importers being well sold up notwithstanding that supplies coming into the market have shown some increase lately. Mixed strings also are in good demand and firm in price, fetching 1.10 to 1.25 cents a pound at ship-

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ping points, while old sisal strings have sold to mills at 2.25 to 2.50 cents per pound.

Roofing bagging is in active call and higher in price. Straight shipments to mills have been made at around 1.20 cents per pound f.o.b. shipping points, and higher figures have been granted for such bagging shipped along with rags. No. 1 scrap bagging is relatively quiet, tissue and manila mills buying only in a limited manner at prices ranging from 1.25 to 1.50 cents a pound at dealers' points. Scrap gunny bagging is advanced with demand on the increase.

F.o.b. shipping point quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.50-1.65
Gunny, No. 1 foreign	1.45-1.60
Scrap bagging, No. 1	1.25-1.50
Roofing bagging	1.20-1.35
Wool tares, heavy	1.60-1.75
Wool tares, light	1.50-1.60
Manila rope, No. 1, foreign	6.25-6.50
Manila rope, No. 1, domestic	6.50-6.75
Sisal strings	2.25-2.50
Mixed strings	1.10-1.25

Old Paper

During the greater part of January the market for old paper ruled rather quiet. Consumers bought in a spotty fashion and at best in limited volume, and the trend of prices was downward generally, although no broad fluctuations were noted. In the last few days, however, the market has shown considerable improvement. Demand from western board mills has picked up substantially, and with prices in the West recording sharp advances, consumers in that part of the country entered the eastern market for supplies, with the result values in New York and other eastern centers have strengthened to a marked degree.

Low grades are in chief call at the moment, reflecting the fact that board manufacturers are doing most of the buying. Folded newspapers are quoted in New York at 95 cents to $1 a hundred pounds f.o.b. that city, while in the West this grade is bringing 1.25 cents a pound f.o.b. shipping points. No. 1 mixed paper is selling in the East at 75 cents a hundred pounds at shipping points and in the West at 1.10 cents a pound, truly a broad price range but indicating the different market situations in the different parts of the country.

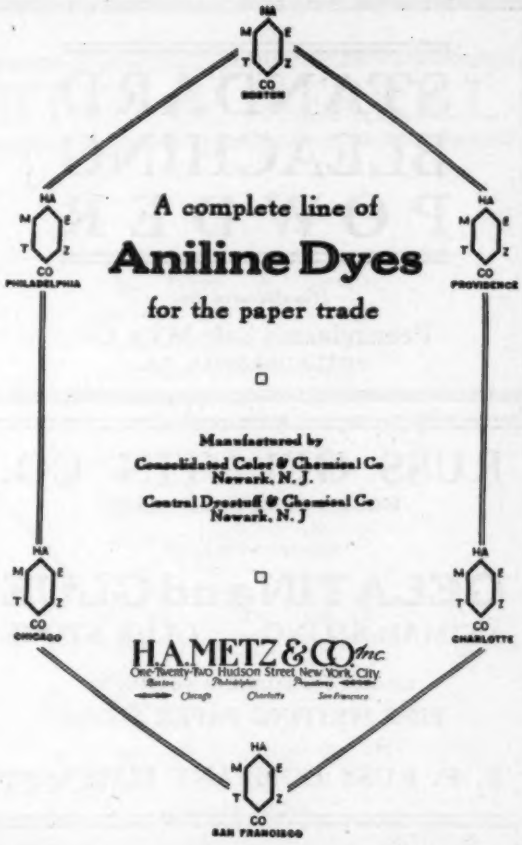
Shavings are comparatively quiet, with the bulk of transactions reported at about a basis of 3.80 cents per pound f.o.b. shipping points for No. 1 hard white, and 3 cents for No. 1 soft white shavings. Old flat heavy magazines are selling at 1.60 to 1.80 cents a pound, depending on the packing, at dealers' points, and ledger stock at around 2 cents per pound. Old kraft paper is firm and in steady demand with No. 1 packing bringing 2.15 cents a pound f.o.b. New York, while white blank news cuttings are meeting with a ready sale at 2.25 cents at dealers' points.

F.o.b. shipping point quotations are:

	New York and Chicago
Hard white shavings, No. 1	3.75-4.00
Hard white shavings, No. 2	3.25-3.50
Soft white shavings	3.00-3.25
Colored shavings	1.50-1.75
Heavy book, No. 1	1.60-1.80
Crumpled book, No. 1	1.30-1.40
Ledger stock	2.00-2.15
Kraft, No. 1	2.15-2.25
Manilas, No. 1	1.10-1.35
White blank news	2.25-2.35
Over-issue news, No. 1	1.10-1.35
Folded news	.95-1.25
Mill wrappings	1.00-1.15
Mixed paper, No. 1	.75-1.10
Common paper	.50- .60

Chemical Pulp

With nearly all kinds of papermaking raw materials enjoying an active demand and showing an advancing price movement, the situation in wood pulp is certainly puzzling. Demand for chemical pulp is at the best light. Paper and board manufacturers exhibit little interest in other than tonnage directly and actually required, and it is quite apparent that buyers have matters much to their liking, being enabled to purchase pulp at price concessions in most quarters and having a greater supply offered them than they seemingly care to absorb.

Probably the outstanding factor in chemical pulp is that large unsold stocks exist. Importations into the United States in 1923 doubtless broke all records, and it is no secret that a

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Unbleached Sulphite 50 tons daily
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Our pulp is made from Canadian Spruce
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Chicago Syracuse Indianapolis

good part of the pulp shipped from Scandinavia, Finland and Germany, as well as from Canada, in recent months is now held by importers or dealers, which they are anxious to dispose of. Furthermore, banks are bringing pressure to bear for the liquidation of these stocks, with the result buyers are securing supplies in nearly every case where they make counter bids below the prices at which pulp is offered to them. Domestic manufacturers furthermore are anxious for business and are not permitting a matter of a slightly lower price to stand in the way of them obtaining orders when to reduce quotations means they get orders.

It is generally felt that most consumers in the United States have bought only such amounts of pulp as they definitely know they will need in the next few months. In fact, market conditions have been such as to encourage such limited purchasing operations. It is therefore believed that any increased consumption of pulp, occasioned by broadening of demand for paper or board, will necessitate an immediate enlargement of the pulp buying program on the part of paper manufacturers, thus leading to the removal of a good part or all of the surplus supply now held in store.

Quoted prices are irregular and on a broad range. Bleached sulphite of No. 1 grade is quoted at 4 to 4.50 cents a pound at pulp mills for bond quality and 3.75 to 4 cents for book quality, while easy bleaching sulphite is quoted at 2.75 to 3 cents at producing mills. No. 1 unbleached sulphite is quoted at around 2.75 cents per pound, and news grade sulphite at 2.50 cents upward at pulp mills. Bleached soda pulp ranges in price from 3.50 to 3.75 cents per pound at producing points, and No. 1 kraft at 2.60 to 2.90 cents.

F.o.b. pulp mill quotations follow:

Bleached sulphite	3.75-4.50
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1	2.60-2.90
News grade sulphite	2.50-2.75
Soda pulp, bleached	3.50-3.75
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.60-2.90
Screenings, refined	1.50-1.75

Mechanical Pulp

Mechanical pulp quotations have displayed a hardening tendency during the last few days following a period when the price trend was in a downward direction. The bulk of current sales are reported at around $35 a ton f.o.b. grinding plants, though quotations depend on the air dry test and the freight from producing to consuming points, and in some cases transactions up to $40 a ton are reported. Available supplies of ground wood appear to be sufficient to cover the wants of consumers, and for a time recently it seemed as though a surplus was being accumulated, grinders being favored with excellent weather conditions and therefore enabled to operate at close to full capacity.

Fair-sized amounts of ground wood are being imported from Scandinavian sources, mostly Norway. Such pulp is selling at about $32 a ton ex. dock New York or other American Atlantic ports, and it is stated that some consumers in the East are filling the bulk of their requirements with such pulp, being able to secure same, owing to lower freight charges, at cheaper prices than domestic or Canadian ground wood.

Chemicals

Papermaking chemicals are in fair demand, with an especially good movement on contracts, and prices hold generally steady. Bleaching powder is quoted at 1.50 cents a pound upward f.o.b. works, with spot shipments priced at slightly higher figures in some quarters. Quotations on caustic soda range from 3 to 3.25 cents per pound for spot shipments, and on soda ash at 1.40 to 1.50 cents per pound in bags f.o.b. shipping points. Casein prices are from 13 to 15 cents per pound, duty paid on the foreign product, and this commodity is enjoying a little better demand. China clay is in fairly good call and prices rule steady.

Average quotations are as follows:

Alum, lump ammonia	3.25- 3.50
Alum, lump starch	3.75- 4.00
Blanc fixe, powdered	4.00- 4.25
Bleaching powder	1.50- 1.75
Brimstone (long ton, at mine)	18.00-20.00
Casein (duty paid)	13.00-15.00
Caustic soda, spot delivery	3.00- 3.25
China clay, domestic washed	12.00-15.00
China clay, foreign	15.00-20.00
Rosin, grade E	5.90- 6.00

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The Mitts & Merrill Shredder will reduce magazines, books, old paper and boxboard, frozen or dried pulp laps, roll and sheet stock in a thoroughly economical manner.

Built in sizes with spouts ranging from 18 to 45 inches wide.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse.

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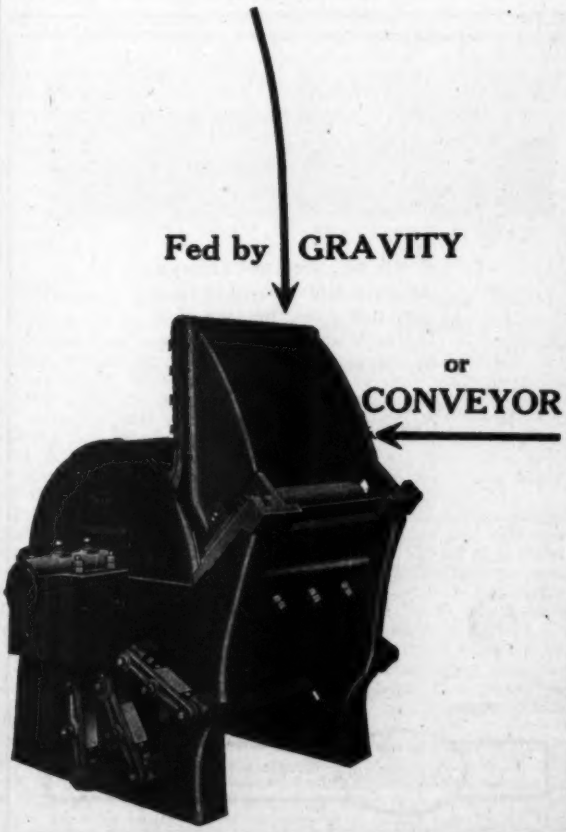

Do You Know

How much pulp may be made from a cord of wood?
How much pulpwood and wood pulp has been exported from Canada?
That the per capita consumption of paper in the United States is 150 lbs. yearly?
That paper-making is a billion-and-a-half-dollar industry in North America?
That 100 million cords of pulpwood have gone into paper in the United States and 30 million cords in Canada?
That a permanently self-contained operation for the manufacture of 100 tons of news print paper daily may require the equivalent of an investment of $10,000,000?
What it cost to grow timber?
What are the essentials of a National Forestry policy?
What are the essentials of a forest "Working Plan"?
What regulations apply to timber cutting in the public forests?
How much forest land in North America is publicly owned and how much privately?
How much and what kinds of timber there are yet left in the various regions of the United States and Canada?
That forestry is the application of definite scientific principles to the growing and using of timber crops.

These are only a few of the questions that are discussed in Royal S. Kellogg's new book entitled

"Pulpwood and Wood Pulp in North America"

The book is of special interest to everyone connected with the pulp and paper industry. It points out clearly what must be done to develop sufficiently our supply of pulpwoods. It shows the steps necessary in forest conservation and discusses the subject from the practical viewpoint of industrial needs.

The book describes the pulpwood industry, the processes of making paper pulp from wood, the timber supply of North America, the need for increased timber production and the future possibilities of the pulp and paper industry. Detailed statistics of production and consumption since the establishment of the industry are given in the appendix and shown in the text by means of graphic charts of unusual effectiveness. The book also carries many illustrations typical of mill operations and forest scenes.

This book should be in the library of every man who is interested in the present and future development of the paper industry.

270 pages, 6x9, 87 illustrations, $4.00 (English price 20s.) net, postpaid. Address all orders to THE PAPER INDUSTRY, 356 Monadnock Bldg., Chicago, Ill.

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Chemistry of the Sulphite Process: R. N. Miller and W. H. Swanson.

Discussion of papers.

Drying and Conditioning of Coated Paper: J. O. Ross.

Effect of Atmospheric Humidity on Paper Tests: P. L. Houston and H. S. Kirkwood.

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A whistle does not always indicate the size of a factory nor does the size of a factory indicate quality of merchandise.

Only quality folks make quality merchandise.

Genuine Vegetable
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Waxed Papers
Bond and Ledgers
Household Specialties

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Made from spruce grown in the forests of Northern Maine.

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New Papers

Writing—	
White rag	20-45
White sulphite	11-30
Colored rag	16-40
Ledger—	
White rag	20-50
White sulphite	13-30
Colored sulphite	40-30
Colored rag	16-50
Bonds—	
White rag	19-45
White sulphite	9-30
Colored sulphite	10-30
Colored rag	18-45
Book—	
No. 1 S. & S. C.	6.25- 7.00
Machine finished	6.00- 6.75
English finished	6.25- 7.00
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Rolls, contract	3.75- 4.00
Rolls, transient	4.00- 4.25
Sheets	4.25- 4.50
Side runs	3.25- 3.75
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Coated, both sides	10.25
Coated, one side	10.15
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No. 1 white, 20x30	.80- .90
No. 2 white, 24-36	.70- .80
No. 1 manila, 24-36	.70- .80
Kraft	1.00- 1.25
Wrappings—	
No. 1 Kraft	6.00- 6.50
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Solid news	52.50-57.50
Straw	55.00-60.00
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White coated chip	65.00-70.00
Manila coated chip	60.00-65.00
Binder's board	75.00-80.00

Chemicals—(Continued)

Satin white	1.75- 2.00
Soda ash, 58 per cent light (bags)	1.40- 1.50
Starch, papermakers', in bags	3.40- 3.70
Talc (ton)	14.00-16.00

Waterproof Case Linings in Export Packing

Waterproofed case lining papers play an important part in export shipping, protecting valuable merchandise against moisture, mold, odors, salt water, and other hazards brought about by stowage in the holds of ships or by the varying climatic changes in foreign countries. There are few commodities that water does not injure. Textiles are discolored and decayed, metals and machinery are rusted, foodstuffs are made unpalatable and chemicals are dissolved or changed in their composition. Even canned goods may be made unsalable by the discoloration or loosenings of labels. It is necessary that the majority of export cases be lined with a tested paper that possesses the requisite waterproof qualities.

In order to place in the hands of exporters data concerning the best types of case lining papers, the Bureau of Standards, through the co-operation of the Paper Division of the Bureau of Foreign and Domestic Commerce, has submitted the following.

Tentative specifications for waterproof case lining paper:

Composition—The paper shall be made of two layers or sheets of 100 percent sulphate kraft paper, cemented together with a layer of asphalt.

Weight—25 by 40, 500, 120.5 pounds basis (24 by 36, 480, 100 pounds). (A tolerance of 10 percent will be allowed on weight.)

Bursting strength—Average of 10 tests shall be not less than 60 points.

Tensile strength—Average of 10 tests in both directions of the sheet, shall be not less than 9 kilograms.

Water resistance—Time of penetration of water shall be not less than one hour.

Methods of Testing

The busting strength shall be determined with a machine by which the paper is firmly clamped against a rubber diaphragm, through which the pressure is applied to a circular area of the paper measuring one square inch.

The tensile test shall be made with a machine of 50 kilogram capacity, set with a distance of 90 millimeters between the clamps at the beginning of the test and with the pulling clamp moving at a speed of 3 inches per minute. The test strips shall be 15 millimeters in width.

The water resistance shall be determined by a modification of the Stockigt method. Samples shall be cut approximately 2½ inches square and moulded into cup shape. This may be done conveniently by using a glass-stoppered bottle having a neck of 1½ inches inside diameter, depressing the paper into the neck of bottle with the stopper. The cup shall be floated in a 2 percent ammonium thiocyanate solution and four drops of 1 percent ferric chloride solution placed immediately at different points inside the cup, near the center of the bottom. The time of penetration shall be the interval from the time the cups are placed in the thiocyanate solution, to the average time that all four drops of the ferric chloride show a pink coloration due to admixture of the two solutions. The time of penetration reported shall be the average time for at least four different cups.

Note: The specifications given are based largely on results of investigative work on various waterproof packing papers being conducted by the Bureau of Standards. As the investigation has not been completed, the Bureau recommends that these specifications be adopted tentatively as possible modifications may be found necessary when more complete information is available.

The weight specified is somewhat higher than in the Army specifications, but a weight tolerance of 10 percent is included which will permit papers of 90 pounds. The usual tolerance is 5 percent, but a higher tolerance was believed to be desirable, as the weight for such papers is difficult to control.

Discover New Plant for Making Paper Pulp

Michigan paper manufacturers are manifesting considerable interest in reports coming from Brazil, explaining that a plant grows there called the aninga, which, it is believed, will eventually take an important place in supplying the paper-making industry. The plant is found in great quantities in the Amazon valley. "Reports indicating the possibility of utilizing this plant in the manufacture of paper," says a prominent Kalamazoo manufacturer, "suggests a field of activity for American capital seeking investment in the South American state."

It is reported that the plant can be worked into a varied number of papers of greatly diversified grades and textures. The range of its usefulness is indicated by the fact that it can be made into the finest of linen, the most delicate tissue, and the coarsest fibre-board. It is a good substitute for cotton and can be transformed into all kinds of cords which have proved as good as any materials in use today.

"We anticipate sending a man to Brazil to thoroughly investigate every detail and report the paper-making possibilities of the recently reported aninga plant, and to ascertain to what extent it exists in the virgin supply," says another Kalamazoo manufacturer.

It is rumored that if the plant proves good for paper-making, several Michigan manufacturers plan to domesticate it and grow it in large acreages. It is pointed out by authorities in the industry that the new discovery may prove a good substitute for the rapidly diminishing pulp wood supply of the United States and Canada.

E. J. KELLER COMPANY
INCORPORATED
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NEW YORK

FOREIGN AND DOMESTIC
PAPER MAKERS' SUPPLIES
CHEMICAL AND MECHANICAL PULPS
COTTON, JUTE AND FLAX WASTES
EAST INDIA MERCHANDISE

WE BEG TO ANNOUNCE THE OPENING OF AN OFFICE AT MALMTORGSGATAN 3, STOCKHOLM, SWEDEN, IN ORDER TO FACILITATE OUR OPERATIONS IN WOOD PULP

The B & Co. INC. QUALITY PULPS

HAFSLUND NORWAY
"HAFSLUND BEAR"
Bleached Sulphite

F: HAGA
"FORSHAGA"
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KRAFT HURUM NORWAY SPECIAL
"HURUM SPECIAL"
Extra Strong Kraft

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A/S TOTEN CELLULOSEFABRIK
Bleached Sulphite

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Easy Bleaching
Sulphite

PERKINS-GOODWIN CO.
NEW YORK
PULP and PAPER

Agents
SUND AKTIEBOLAG
Strong Unbleached Sulphite
(Indirect Cooking)

EXPORTS

Exports of paper from the United States recorded a decline during November compared with the preceding month. Total exports in November reached a value of only $1,926,607, contrasted with $2,118,841 worth of paper exported in October, and $2,012,689 during November, 1922, according to compilations of the Department of Commerce. This decline was fairly general, about two-thirds of the different classes of paper showing a decrease in value, compared with the preceding month, but the outstanding decreases were in exports of paper board and straw board, which amounted to only $146,999 during November, compared with $210,440 in October; paper bags, which fell from $93,910 to $62,246 during the same periods, and boxes and cartons, which were valued at $117,333 in October and only $84,286 in November.

Exports of wrapping papers, other than kraft, advanced $28,566 during November, compared with the preceding month. Other increases which were observable in export shipments were: News print, $19,499; wall board, $19,835; playing cards, $18,817; writing paper, $17,770; envelopes, $12,610, and a few lesser items.

IMPORTS

Wood Pulp

Foreign wood pulp continues in a very unsettled market condition in the United States. Demand for this commodity is not what the trade is desirous of seeing, and, from all appearances, there is more pulp available than consumers show willingness to purchase. Moreover, it seems as if a good part of the stocks held are in rather weak hands. Banks are bringing pressure to bear in some cases for the liquidation of stocks, and this obviously makes for easiness in prices since holders frequently are obliged to market pulp for whatever they can induce consumers to pay, thus creating market conditions very much in favor of buyers.

How much longer the situation which exists at present and which has prevailed now for some months can go on is a matter for conjecture. The pulp market in this country has been weak and quiet for a considerable period. Consumers have bought and are still buying in a very spotty manner, and almost solely to cover direct requirements. The feeling exists that most paper and board mills are running along with small stocks of pulp, and with comparatively little supply orders against forward needs. This condition, if true, may prove the salvation of the pulp market, for if mill stocks are low and if demand for paper or board should expand beyond expectations of manufacturers, consumers would be forced into the pulp market all at once and for substantial amounts of pulp, thereby removing a good part of present surplus holdings and doubtless leading to an appreciable firming of prices.

Consumers themselves in frequent instances acknowledge that they think pulp is cheap at today's market levels. Importers are disposing of supplies at prices below the cost of replacement at primary sources, and it is generally believed that pulp cannot be profitably produced at prevailing market values either in Scandinavia, in the United States or elsewhere. This state of affairs is prompting some paper makers to enter the market and cover a part of their forward requirements, but instances of this sort are so infrequent that the effect of such demand on the market is next to negligible. Most consumers have become so accustomed to low prices on pulp and to having their counter offers at below the rates quoted by sellers accepted that they are insistent on getting such supplies as they are interested in at reduced prices, and sellers as a rule are in a position where they find it necessary to grant the concessions demanded. Therefore values are given scant opportunity to improve their position under such circumstances.

Importations of wood pulp into the United States continue on a large scale, according to Government statistics, although the latest figures available show a slight decline in receipts during November compared with the preceding month. Total imports in November last amounted to 76,441 net tons of all grades of chemical pulp, contrasted wtih 81,520 tons imported in October last, and 113,313 tons in November, 1922. November imports brought the total for the first eleven months of 1923 up to 920,216 net tons, giving a monthly average of 83,656 tons, compared with a monthly average of 79,682 tons in the same period of 1922.

Imports of mechanical pulp in November last were 27,380 net tons, against 23,469 tons imported last October and 24,737 tons in November, 1922. Total imports of mechanical in the first eleven months of last year were 246,771 net tons, giving a monthly average of 22,433 tons, contrasted with a monthly average of 16,830 tons in the corresponding time of 1922.

Quotations on bleached sulphite of foreign origin and of No. 1 grade range from 3.75 to 4.25 cents a pound ex dock New York, depending on the quality of the pulp concerned. Unbleached sulphite of strong quality is quoted at 2.50 to 2.75 cents on the dock, and easy bleaching sulphite at 2.75 to 3 cents. Foreign kraft pulp of No. 1 grade is quoted at 2.50 to 2.60 cents ex dock generally though sales at lower prices have been recorded. Imported ground wood is selling at around $32 a ton ex dock New York or other American Atlantic ports.

Receipts at the port of New York in January and current market quotations ex dock New York follow:

Bleached sulphite, No. 1	$ 3.75- 4.25
Unbleached sulphite, No. 1	2.50- 2.75
Easy bleaching	2.75- 3.00
Mitscherlich unbleached	2.80- 3.00
Kraft	2.40- 2.65
Ground wood, per ton	31.00-35.00

Castle & Overton, 2,616 bls. from Bremen, 600 bls. from Gothenburg and 150 lbs. from Rotterdam; A. J. Bracher & Co., 1,027 bls. from Hamburg; Lagerloef Trading Co., 2,590 bls. from Bremen, 103 bls. from Helsingfors and 155 bls. from Kotka; E. M. Sergeant & Co., 3,600 bls. from Christiania and 604 bls. from Gothenburg; E. Naumberg & Co., 2,218 bls. from Trieste; Johaneson, Wales & Sparre, 3,565 bls. from Gothenburg, 5,316 bls. from Helsingfors and 500 bls. from Copenhagen; Parsons & Whittemore, 400 bls. from Gothenburg; R. F. Hammond, 1,200 bls. from Bremen and 750 bls. from Gothenburg; H. Hollesen, 7,883 bls. from Bremen and 3,610 bls. from Hamburg; Bulkley, Dunton & Co., 3,625 bls. from Bremen and 1,500 bls. from Helsingfors; American Woodpulp Corp., 374 bls. from Bremen, 1,303 bls. from Hamburg and 1,051 bls. from Rotterdam; Pagel, Horton & Co., 7,200 bls. from Husum, 7,200 bls. from Domsjo, 3,480 bls. from Stockholm and 1,336 bls. from Helsingfors; M. Gottesman & Co., 2,450 bls. from Rotterdam and 1,567 bls. from Hamburg; Tidewater Paper Mills Co., 12,300 bls. from Windsor, N. S.; J. Andersen & Co., 450 bls. from Helsingfors and 4,050 bls. from Christiania; E. J. Keller Co., 275 bls. from Helsingfors; Tradesmen's National Bank of Philadelphia, 11,630 bls. from Kragero; National City Bank, 353 bls. from Gotheburg and 1,200 bls. from Copenhagen; International Acceptance Bank, 1,250 bls. from Gothenburg; New York Trust Co., 125 bls. from Christiania; Nilsen, Lyon & Co., 300 bls. from Bremen; Mechanics & Metals National Bank, 250 bls. from Gothenburg; Order, 5,375 bls. from Christiania, 1,200 bls. from Rotterdam, 2,250 lbs. from Gothenburg, 1,035 bls. from Bremen and 2,350 bls. from Hamburg.

Paper Stock

Importations of papermaking materials other than wood pulp into the United States in January were about normal, judging from receipts at the port of New York, with arrivals of some materials probably a little above normal. Sizeable shipments of rags were received, the bulk of which was low grades for roofing paper mills, while usual amounts of old rope were imported. Imports of all kinds of paper stock at the port of New York in January, with names of consignees, follow:

The Pulp and Paper Trading Co.
21 East 40th Street New York City

DEALERS IN DOMESTIC CHEMICAL AND MECHANICAL PULPS AND PAPER

AGENTS FOR
J. & J. Rogers Company, Ausable Forks, N. Y.
E. B. Eddy Company, Ltd., Hull, Canada

Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co., Port Huron, Mich.

SULPHATE OF ALUMINA
MANUFACTURED BY
THE JARECKI CHEMICAL CO.

SODA ASH 58%
MANUFACTURED BY
PITTSBURGH PLATE GLASS CO.
COLUMBIA CHEMICAL DIVISION

The Isaac Winkler & Bro. Co.
Sole Selling Agents
Cincinnati New York

J. ANDERSEN & CO.
21 East 40th Street, New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

Quality Guaranteed

The Smallwood-Low Stone Co.
Lisbon, Ohio
U. S. A.

THE ZAREMBA PATENT EVAPORATOR
Excels in All-round Performance

Why It Excels—

Horizontal Tubes mounted in Steel Tube-sheets with Tube-holes drilled to template and counterbored.

Tube Packings specially designed to provide a joint equal to that of a pump-rod stuffing-box.

Packing Plates in steamchests accessible without removing steamchest covers.

Complete removal of air from steamchests.

Liquor Downtake at each side of Tube-nest isolated by Partition Plates produce positive circulation on principle of Air-lift Pump.

Use of Cylindrical Bodies reduced joints to a minimum—no leakage here.

The Hughes Centrifugal Separator mounted opposite to vapor outlet reduces Entrainment Loss to practically nothing. This loss in the two Quads shown above is one-tenth of one per cent, as determined in service.

Multiple-effect Heaters and Surface Condensers supplied where extra heating and pure water are wanted.

To improve performance and increase capacity of existing evaporators, we are prepared to replace old bodies with Zaremba Patent Bodies—utilizing present piping, heaters and condensers.

Let us remove your difficulties.

ZAREMBA COMPANY
508 Crosby Bldg.
Buffalo, N. Y.

Old Rope

Brown Bros. & Co., 324 coils and 83 bls. from Hull, 99 coils and 275 bls. from Antwerp, 125 coils and 53 bls. from Hamburg, 40 bls. from Marseilles, 352 coils from Bristol, 163 coils from Newcastle and 342 coils from Rotterdam; E. J. Keller Co., 39 bls. from Stockholm, 59 bls. from Copenhagen, 132 bls. from Havre, 144 bls. from Rotterdam, 131 bls. from Bremen, 659 coils from Newcastle and 18 bls. from Hamburg; International Purchasing Co., 33 coils and 184 bls. from Havre and 23 coils from Hamburg; Union National Bank of Philadelphia, 29 coils from Hamburg; Jonas & Naumberg, 14 bls. from Antwerp; International Acceptance Bank, 61 coils from Glasgow, 306 bls. from Palermo, 75 bls. from Naples and 29 bls. from Rotterdam; Ellerman-Wilson S. S. Line, 45 coils from London; Union National Bank of Philadelphia, 31 coils from Bremen; T. Owen & Co., 2 bls. from Santiago; Bank of New York & Trust Co., 124 bls. from Barcelona; National City Bank, 73 bls. from Barcelona; W. Shall & Co., 27 bls. from Barcelona; Order, 94 coils and 44 bls. from Rotterdam, 50 bls. from Barcelona and 61 coils from Glasgow.

Old Bagging

Kidder-Peabody Acceptance Corp., 151 bls. from Havre; E. J. Keller Co., 87 bls. from Havre, 266 bls. from Barcelona, 100 bls. from Copenhagen and 92 bls. from Antwerp; Equitable Trust Co., 163 bls. from Manchester; Guaranty Trust Co., 70 bls. from Manchester.

Rags

Castle & Overton, 221 bls. from Antwerp; Albion Trading Co., 151 bls. from Liverpool; E. J. Keller Co., 501 bls. from Rotterdam, 27 bls. from Hamburg, 829 bls. from Copenhagen, 1,335 bls. from Trieste and 313 bls. from Barcelona; Rudolf Wolf, 127 bls. from Rotterdam; J. J. Patricof, 189 bls. from Rotterdam; M. Wolfer & Co., 23 bls. from Havana; McKenzie & Foster, 99 bls. from Dunkirk; Stone Bros. & Victor Galaup Co., 194 bls. from Dunkirk, 66 bls. from Naples, 285 bls. from Havre and 15 bls. from Rotterdam; Maurice O'Meara Co., 47 bls. from Buenos Aires and 38 bls. from Rotterdam; P. Berlowitz, 111 bls. from Rotterdam and 68 bls. from St. Nazaire; Daniel M. Hicks, Inc., 74 bls. from Dunkirk; Robert Blank, 124 bls. from Rotterdam; Salomon Bros. & Co., 94 bls. from St. Nazaire and 56 bls. from Hamburg; George M. Graves Co., 58 bls. from London; L. H. Abenheimer, 260 bls. from Barcelona and 149 bls. from Antwerp; Goldman, Sachs & Co., 109 bls. from St. Nazaire and 41 bls. from Antwerp; Brown Bros. & Co., 78 bls. from Manchester, 659 bls. from Antwerp, 132 bls. from Newcastle, 5 bls. from Glasgow and 150 bls. from Havre; Bank of New York & Trust Co., 82 bls. from Barcelona; Paterson National Bank, 68 bls. from Bordeaux; Equitable Trust Co., 2,741 bls. from Havre; Mechanics & Metals National Bank, 73 bls. from Havre and 31 bls. from Hamburg; International Acceptance Bank, 222 bls. from Hamburg, 57 bls. from Manchester, 102 bls. from Antwerp and 24 bls. from Rotterdam; Guaranty Trust Co., 203 bls. from Manchester, 71 bls. from London and 428 bls. from Bristol; Irving Bank-Columbia Trust Co., 110 bls. from Dunkirk, 77 bls. from Antwerp and 94 bls. from Hamburg; Chemical National Bank, 49 bls. from Bremen; W. Schall & Co., 359 bls. from Barcelona; Wilkinson Bros. & Co., 17 bls. from Rotterdam; A. W. Fenton, Inc., 413 bls. from Rotterdam; Strupp & Co., 115 bls. from Hamburg; Atlas Waste Mfg. Co., 43 bls. from Rotterdam; First National Bank of Boston, 17 bls. from Leghorn; Baldwin Universal Co., 80 bls. from Glasgow; Philadelphia National Bank, 165 bls. from Newcastle; Chase National Bank, 207 bls. from Bremen; Order, 636 bls. from Liverpool, 13 bls. from Havre, 159 bls. from Manchester, 70 bls. from London, 329 bls. from Leghorn, 20 bls. from Newcastle, 38 bls. from Genoa, 58 bls. from Alexandria, 52 bls. from Rotterdam, 18 bls. from Hamburg and 177 bls. from Belfast.

Miscellaneous Paper Stock

Daniel M. Hicks, Inc., 23 bls. from Dunkirk; Salomon Bros. & Co., 329 bls. from Hamburg and 126 bls. from Antwerp; W. Schall & Co., 157 bls. from Antwerp and 104 bls. from Hull; Union National Bank of Philadelphia, 131 bls. from Hamburg; E. J. Keller Co., 218 bls. from Hamburg, 122 bls. from Dunkirk, 943 bls. from Antwerp and 14 bls. from Rotterdam; Irving Bank-Columbia Trust Co., 216 bls. from Dunkirk and 715 bls. from Antwerp; Hughes, Fawcett & Co., 10 bls. from Antwerp; Andrews & Cook, 8 bls. from Antwerp; New York Trust Co., 104 bls. from Antwerp; Equitable Trust Co., 10 bls. from Glasgow, 10 bls. from Liverpool and 60 bls. from Dundee; H. Muehlstein, 276 bls. from Glasgow; International Acceptance Bank, 33 bls. from Glasgow; Castle &

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MAKES your pulp of better quality. The action of the Howard Refiner is to brush out any fibrous material to pulp with a minimum of injury to the fibre.

The quality of pulp produced will be found much better than the pulp as generally reduced. This improved quality means a higher net value per ton.

The Howard Refiner is a time tried machine. It is in use in many paper mills in the United States, Canada and other countries and is giving excellent results.

Detailed information will be gladly furnished on request.

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FOR SODA AND SULPHATE MILLS

Our service to pulp and paper mills on their recovery problems is based on many years' successful experience. Some of the largest installations in the United States and Canada are Swenson's.

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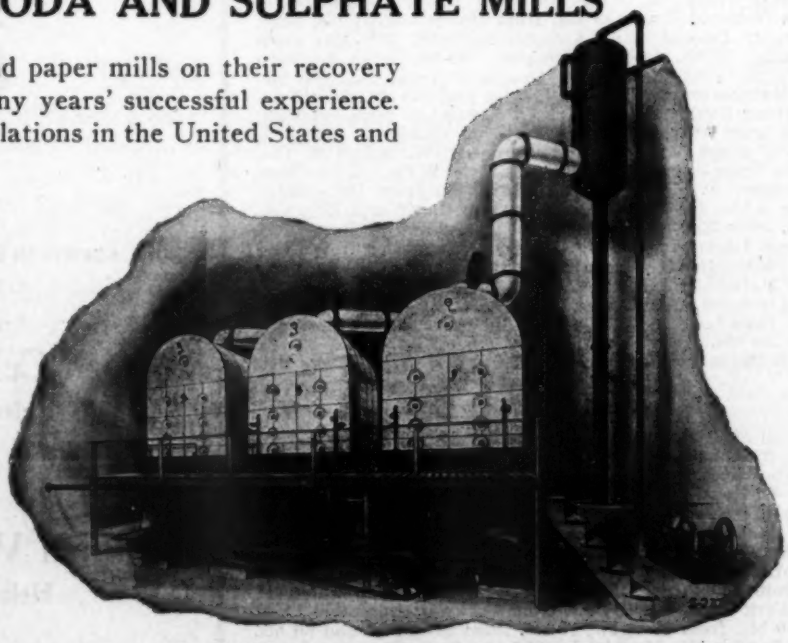

Standard Swenson Horizontal Tube, Triple Effect

Overton, 7 bls. from Belfast; Mechanics & Metals National Bank, 39 bls. from Hamburg; Maurice O'Meare Co., 135 bls. from Antwerp; American Exchange National Bank, 209 bls. from Antwerp; Guaranty Trust Co., 72 bls. from Dundee; Baring Bros. & Co., 116 bls. from Dundee; State Bank, 124 bls. from Glasgow; American Express Co., 24 bls. from Glasgow; Order, 59 bls. from Hull, 305 bls. from Hamburg, 83 bls. from Leghorn, 258 bls. from London, 9 bls. from Dundee and 137 bls. from Glasgow.

Paper

Fairly heavy arrivals of wrapping paper from German and Scandinavian sources and of news print featured imports of paper into the United States during January. There were some exceptionally large amounts of kraft wrapping received through the port of New York. Imports of cigarette, hanging, filter and other kinds of paper were about normal. Receipts of paper of all kinds through the port of New York in January follow:

Cigarette

American Tobacco Co., 1,900 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 2,100 cs. from St. Nazaire; De Manduit Paper Corp., 431 cs. from St. Nazaire; P. J. Schweitzer, 59 cs. from Southampton and 50 cs. from Antwerp; N. Stephenson & Co., 10 cs. from Constantinople; Standard Products Corp., 240 cs. from Havre; F. P. Gaskell & Co., 90 cs. from Havre; Surbrug Co., 16 cs. from Havre; Southern Pacific Co., 3 cs. from Havre and 3 cs. from Southampton; E. Waters, 10 cs. from Marseilles; Taylor & Co., 10 cs. from Barcelona; J. Victori & Co., 2 cs. from Barcelona; Zorro Tobacco Co., 12 cs. from Lisbon; Order, 13 cs. from Constantinople and 12 cs. from Trieste.

Printing

Chatham & Phenix National Bank, 55 rolls from Hamburg; Parsons & Whittemore, 706 rolls from Bremen and 163 rolls from Helsingfors; American Exchange National Bank, 866 rolls from Bremen and 190 rolls from Christiania; W. Hartmann & Co., 118 rolls from Hamburg; International Acceptance Bank, 502 rolls from Hamburg; F. O. Nelson Co., 78 rolls from Hamburg; Chemical National Bank, 685 rolls from Hamburg; B. F. Drakenfeld & Co., 44 cs. from Liverpool; Oxford University Press, 24 cs. from Liverpool; Perkins-Goodwin Co., 92 rolls from Bremen and 64 cs. from Genoa; Irving Bank-Columbia Trust Co., 480 rolls from Copenhagen and 117 rolls from Hamburg; Bankers Trust Co., 199 rolls from Hamburg; Majestic Mills Paper Co., 114 bls. from Hamburg; P. C. Zuhlke, 236 cs. from Antwerp; New York & Hauseatic Corp., 300 rolls from Hamburg; Publicity Paper Corp., 32 bls. from Trieste; M. Gottesman & Co., 348 rolls from Gothenburg; Newsprint Paper Corp., 492 rolls from Gothenburg; Central Union Trust Co., 138 rolls from Gothenburg; Hudson Trading Co., 57 rolls from Hamburg; J. B. Moors & Co., 112 rolls from Hamburg; A. H. Ringk & Co., 66 rolls from Hamburg; Miller Paper Co., 597 rolls from Gothenburg; J. P. Heffernan Paper Co., 10 bls. from Hamburg; Maurice O'Meara Co., 147 bls. from Hamburg; Jewish Daily Forward, 3 rolls from Hamburg; Order, 139 rolls from Helsingfors, 624 rolls from Bremen, 162 rolls from Hamburg, 218 rolls from Christiania and 83 rolls from Gothenburg.

Wrapping

W. Hartmann & Co., 3,583 rolls and 787 bls. from Hamburg; J. P. Heffernan Paper Co., 2,747 bls. and 106 rolls from Hamburg, 69 bls. from Trieste and 391 bls. from Gothenburg; Chemical National Bank, 777 bls. and 138 rolls from Hamburg; Wilkinson Bros. & Co., 1,902 rolls and 2,347 bls. from Rotterdam, 589 bls. and 343 rolls from Hamburg and 48 bls. from Gothenburg; Bankers Trust Co., 99 rolls from Hamburg; Guaranty Trust Co., 59 bls. from Hamburg; Bernard, Judae & Co., 4 bls. from Hamburg; Gallagher & Ascher, 119 bls. from Hamburg; F. & R. Trading Corp., 246 rolls from Hamburg; Blauvelt-Wiley Paper Mfg. Co., 12 rolls and 90 bbls. from Hamburg and 167 bls. from Glasgow; Birn & Wachenheim, 18 bls. from Rotterdam; C. G. Keferstein, 1,322 rolls from Hamburg; National City Bank, 178 bls. and 152 rolls from Hamburg and 8 bls. from Gothenburg; Chase National Bank, 463 rolls and 55 bls. from Hamburg and 54 rolls from Gothenburg; M. V. Bowater & Son, 114 rolls from Hamburg; National Paper & Type Co., 166 bls. from Hamburg and 19 bls. from Rotterdam; New York Trust Co., 269 rolls and 108 bls. from Trieste; R. Wilson Paper Corp., 10 cs. from Glasgow; D. S. Walton & Co., 1,085 rolls and 72 bls. from Gothenburg; Arkell Safety Bag Co., 290 rolls from Gothenburg; Republic Bag & Paper Co., 2,071 rolls from Rotterdam; Publicity Paper Corp., 2,173 rolls and 807 bls. from Rotterdam; Steiner Paper Corp., 24 bls. from Rotterdam and 58

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One Tissue Machine, 80 inch, with Marshall drive.

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One Nash dryer exhaust unit.

One super calender, 52 inch Holyoke, with cotton rolls.

Ten Marshall drives. Rice Barton and Fales self-contained type with 6-inch mortise gears.

Fan pumps: 4-inch and 6-inch Pusey & Jones centrifugal pumps; 6-inch and 8-inch Worthington Volute pumps.

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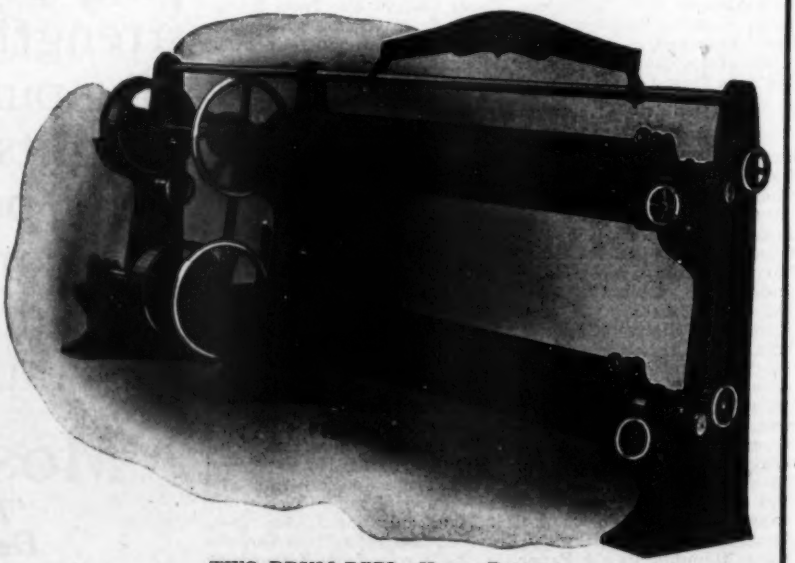

TWO DRUM REEL—Heavy Pattern

bls. from Bremen; Irving Bank-Columbia Trust Co., 8 rolls and 30 bls. from Rotterdam, 63 bls. from Antwerp and 110 bls. from Bremen; Safran & Co., 24 bls. from Rotterdam; First National Bank of New York, 37 bls. from Hamburg; Maurice O'Meara Co., 27 bls. from Hamburg and 1,769 bls. from Rotterdam; American Express Co., 212 rolls from Bremen and 9 rolls and 25 bls. from Gothenburg; W. Schall & Co., 1,927 rolls and 38 bls. from Hamburg; E. Ditzgen & Co., 16 cs. from Hamburg; O. A. Anderson & Co., 20 bls. from Gothenburg; International Acceptance Bank, 26 bls. from Gothenburg; Order, 4,595 rolls and 2,206 bls. from Hamburg, 100 rolls from Trondhjem, 647 rolls and 15 bls. from Trieste, 26 bls. from Harnosand, 2,772 bls. from Kotka, 785 rolls and 125 bls. from Bremen and 165 rolls and 163 bls. from Gothenburg.

Writing

Order, 37 cs. from Hamburg.

Drawing

E. Dietzgen & Co., 2 cs. from London and 2 cs. from Hamburg; H. Reeve Angel & Co., 6 cs. from London; Keuffel & Esser Co., 159 cs. from Hamburg and 13 cs. from Rotterdam; Order, 2 cs. from London.

Filter

J. Manheimer, 61 bls. from Southampton; H. Reeve Angel & Co., 19 cs. from London; Bernard, Judae & Co., 31 bls. from Bordeaux and 15 cs. from Hamburg; F. Euler & Co., 4 cs. from Hamburg; E. Fougera & Co., 87 cs. from Southampton.

Tissue

Meadows, Wye & Co., 2 cs. from Liverpool; F. C. Strype, 86 cs. from Liverpool; Brooks Paper Co., 6 cs. from Liverpool.

Photo

Globe Shipping Co., 214 cs. from Bremen; Gevaert Co. of America, 62 cs. from Antwerp; J. J. Gavin & Co., 2 cs. from Liverpool; P. C. Zuhlke, 183 cs. from Antwerp.

Hanging

A. C. Dodman, Jr., & Co., 4 bls. from Havre, 34 bls. from Liverpool, 6 bls. from Antwerp and 37 bls. from Southampton; F. J. Emmerich & Co., 6 bls. from London, 122 bls. from Liverpool, 39 bls. from Southampton and 69 bls. from Hamburg; F. G. Prager & Co., 2,212 rolls from Hamburg; W. H. S. Lloyd & Co., 119 bls. from London and 77 bls. from Liverpool; National City Bank, 747 rolls from Hamburg; American Exchange National Bank, 591 rolls from Rotterdam; R. F. Downing & Co., 23 bls. from London; Hallgarten & Co., 1,108 rolls from Hamburg; Order, 522 rolls from Hamburg.

Board

A. Vuyck, 46 rolls from Rotterdam; F. G. Prager & Co., 16 cs. from Hamburg; Metropolitan Import & Mfg. Co., 31 cs. from Hamburg; Flexideal Co., 70 cs. from Bremen; Bendix Paper Co., 6 cs. from Hamburg; American Paper Exports, Inc., 76 cs. from Liverpool; O. M. Baxter, 118 cs. from Gothenburg; New York Label & Box Works, 9 cs. from Hamburg; O. G. Hempstead & Son., 16 cs. from Bremen; H. H. Ayer, 4 cs. from Havre; C. B. Richard & Co., 7 cs. from Hamburg; International Acceptance Bank, 106 bls. from Hamburg; Order, 51 cs. from Hamburg.

Miscellaneous

A. Frankan & Co., 17 cs. from Bremen; Steiner Paper Corp., 36 cs. from Rotterdam; W. Van Doorn, 6 cs. from Rotterdam; Schenker's, Inc., 20 cs. from Rotterdam; Corn Exchange Bank, 10 cs. from Hamburg; P. H. Petry & Co., 11 cs. from Bremen and 27 cs. from Hamburg; Whiting-Patterson Co., 42 cs. from Havre and 4 cs. from Hamburg; Japan Paper Co., 145 cs. from Genoa, 19 cs. from Havre, 3 cs. from Gothenburg and 7 cs. from Rotterdam; Bernard, Judae & Co., 5 bls. from Gothenburg and 5 cs. from Hamburg; A. Flinn & Co., 6 cs. from Havre; F. C. Strype, 33 cs. from Antwerp; Birn & Wachenheim, 19 cs. from Hamburg; C. W. Williams & Co., 46 cs. from Antwerp and 145 bls. from Trieste; P. D. Winter, 42 bls. from Glasgow; Globe Shipping Co., 6 cs. from Rotterdam, 3 cs. from Havre and 108 cs. from Bremen; Martin & Bechtold, 4 cs. from Hong Kong; Redden & Martin, 5 cs. from Hamburg; A. V. Berner & Co., 31 cs. from Rotterdam; Dupont Cellophane Co., 49 cs. from Havre; H. C. Davison & Co., 8 cs. from Kobe.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Com-

SIMONDS

Barker and Chipper Knives

The best knives for Pulp Mills. Made of the finest edge-holding steel, skillfully made and tempered right to withstand wear.

Write for Catalog and Prices

Simonds Saw & Steel Co.

Fitchburg, Mass. Chicago, Ill.

DUXBAK BELTING

TRADE MARK

for wet places, dry places, hard drives

—an ideal belting for paper mill drives

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DUXBAK BELTING TRADE MARK

Chas. A. Schieren Company ESTABLISHED 1848

Tanners Leather Belt Mfrs.

Main Office and Factory 73 Ferry Street, NEW YORK

Branches and Distributors in All Leading Cities

20 Per Cent Saving in Steam Guaranteed

The STICKLE COMPOUND CONDENSING SYSTEM and AUTOMATIC STEAM CONTROL for Paper Machines is guaranteed to save you 20 per cent in steam consumed for this purpose.

Our folder entitled "How to Dry Paper"—showing our Compound Condensing System for draining the dryers and heating the air with the discharge from the dryers to condition the machine room should interest you.

Send for this folder to-day

Stickle Steam Specialties Company
Indianapolis, Ind.
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New Sand Filter

A SPECIAL filter for paper mills, producing all the results the paper manufacturer desires. It is a modification of the well known Hungerford filter adapted to paper mill use. It is constructed of concrete, strictly wrought iron pipe, brass strainers and especially prepared silica sand. It is as durable and efficient as can be built at any cost. It can be sold at a very low figure.

This filter gives perfectly clear water, washes thoroughly, does not require renewal of the sand bed, is absolutely reliable in the performance of its duty and requires a minimum amount of attention.

Send for full particulars

Hungerford & Terry, Inc.
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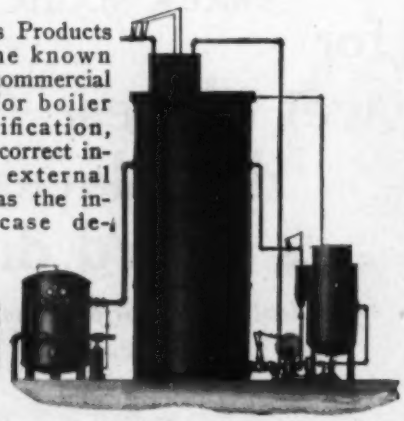
Water Softening and Filtration

Paige-Jones Products include the known successful commercial methods for boiler water purification, permitting correct internal or external treatment as the individual case demands.



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Write today for descriptive literature.

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A. D. COOK, Inc.
Lawrenceburg Indiana

FIG. NO. 30

Manufacturers of Deep Well Pumps, Working Barrels, Rods, Foot Valves, Strainers and a full line of Water Well Supplies.

The accompanying half tone shows the COOK Patent Brass Tube Well Strainer with Standard Fittings, which are Bail Plug in the bottom and Foot of Blank and Lead Packer on top.

When the COOK Strainer is properly selected for the water bearing sand, capacity and method of pumping, it will successfully deliver the maximum yield of the well for many years free from sand and the troubles incident thereto.

Write for Bulletin 30A

merce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 8592—Carbon paper. Geneva, Switzerland. Purchase desired.

No. 8637—Fiber board, vulcanized. Sydney, Australia. Agency desired.

No. 8611—Paper and sundries, stationery. Amritzar, India. Purchase and agency desired.

No. 8798—Wall paper. Leeds, England. Purchase desired.

No. 8913—Cartons for pop-corn cakes, and wax paper. Coblenz, Germany. Purchase desired.

No. 8898—Paper, writing and printing, 34,000 kilos (about 75,000 pounds) of various grades. Montevideo, Uruguay. Purchase desired.

No. 9000—Wrapping paper. Port au Prince, Haiti. Agency desired.

Convention Committee of American Paper and Pulp Mill Superintendents' Association Meets

The Convention Commitee of the American Paper and Pulp Mill Superintendents' Association met at 11 a. m., Sunday, January 13, 1924, in the English Room of the Congress Hotel in Chicago, Illinois.

Mr. Peter J. Massey, general secretary of the Association, called the meeting to order and in addition there were the following members present:

Mr. H. W. Server, 5th vice president of the Association from the Miami Valley Division.

Mr. Lloyd T. Murphy, of the Miami Valley Division.

Mr. E. T. A. Coughlin, 1st vice president of the Association from the Michigan Division.

Mr. E. H. Gilman, of the Michigan Division.

Mr. L. E. Smith, chairman of the Northwest Division.

Mr. B. T. McBain, third vice president of the Association from the Northwest Division.

A dinner was served in the Committee Room at 1:30 and the business of the convention took up the entire day, adjournment being taken at 6 p. m.

The program for the National Convention to be held in Dayton, Ohio, May 22, 23 and 24th, 1924, was arranged for, and all the different committees on transportation, entertainment and finances made satisfactory reports.

The Dayton Automobile Club, as well as the Chamber of Commerce, Engineers Club and other public spirited organizations of the cities of Dayton and Middletown, Ohio, have expressed their willingness to aid the committee in its work and General Chairman H. W. Server is very well pleased with the way everyone is knuckling down to business to make the Dayton (Ohio) convention the best yet held.

Promise of a large delegation of Technical Association members at this convention was received from W. C. MacNaughton, secretary of that association and also the promise of a valuable paper by Mr. H. S. Taylor, president of the Technical Association, on steam and power matters shows that these two associations of the pulp and paper industry are more and more becoming the co-operating twin brothers that they should be and that the pulp and paper industry so badly needs in times of stress.

Salesmen to Hold Special Luncheon

The New York Division of the Salesmen's Association of the Paper Industry has decided to hold a special executive luncheon, Wednesday, February 20, which will take the place of the usual Monday luncheon meeting for that week. Members from all parts of the country are invited.

Vice-President Ewing for the New York Division named the following committee to begin plans at once for the annual convention on April 8, 1924.

F. N. Countiss, Chairman; R. K. Baker; E. C. Chadwick; W. F. Heath; G. A. Keeney, Jr.; E. G. Lloyd; J. W. Quimby; Chester M. Robbins; G. M. Wetmore; R. D. W. Ewing, ex-officio; J. L. Fearing, ex-officio. In addition, the following were named on the committee from other divisions; G. K. Gibson, Chicago; Robert T. Houk, Jr., Ohio; F. W. Main, New England; D. H. Ross, Kalamazoo.

The Michigan Alkali Company, whose products of soda ash, caustic soda, and other commodities, have been distributed through Edward Hills' Son & Company, of New York City, will in the future sell its products through its own general sales department, with offices at 21 East Fortieth street, New York. The same personnel which has been handling this business will continue under the new arrangement, with E. W. Taylor as general sales director.

THE "UNIVERSAL GIANT" CAST IRON DROP HANGER

"UNIVERSAL GIANT" CAST Iron Hangers are non-flexible and hold the shaft in position without bending or working apart.

BALL and SOCKET ADJUSTMENT reduces friction and insures perfect alignment of shafting.

RING OILING BEARINGS provide positive automatic lubrication.

T. B. WOOD'S SONS CO.
CHAMBERSBURG, PA.

POWER TRANSMITTING MACHINERY

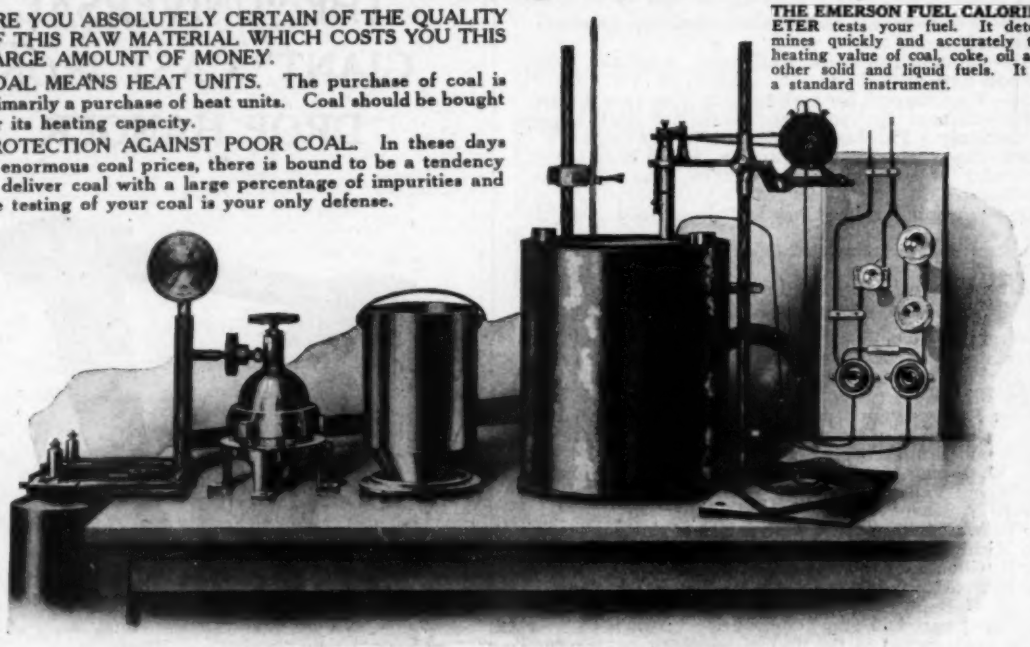
The COAL account is the largest account on your books

ARE YOU ABSOLUTELY CERTAIN OF THE QUALITY OF THIS RAW MATERIAL WHICH COSTS YOU THIS LARGE AMOUNT OF MONEY.

COAL MEANS HEAT UNITS. The purchase of coal is primarily a purchase of heat units. Coal should be bought for its heating capacity.

PROTECTION AGAINST POOR COAL. In these days of enormous coal prices, there is bound to be a tendency to deliver coal with a large percentage of impurities and the testing of your coal is your only defense.

THE EMERSON FUEL CALORIMETER tests your fuel. It determines quickly and accurately the heating value of coal, coke, oil and other solid and liquid fuels. It is a standard instrument.



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171 TREMONT STREET, MELROSE HIGHLANDS, MASS.

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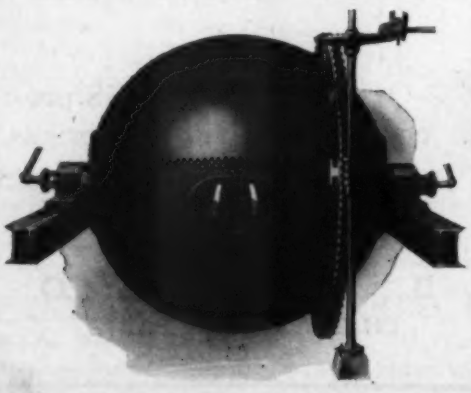
Globe and Cylinder Rotary Bleaching Boilers
Digesters, Riveted Steel Tanks
Flumes, Smokestacks, Penstocks, General Steel Plate Construction of every description



Precision
the basis of Biggs durability

This is the verdict of an eminent consulting engineer in the employ of the largest and oldest manufacturer of digester linings.

In a letter to The Biggs Boiler Works Company he says:

"In our opinion, the HABIT of precision is the reason you have been so successful in the manufacture of rotary digesters.

When either a globe or cylinder digester is not true to shape and the cooking pressure is applied, this internal pressure forces it into a true sphere or circle, and when pressure is relieved it tries to go back to its former shape, and the continual weaving back and forth is responsible for early fatigue of the plates. It is the opinion of many engineers that this continual working of imperfectly formed digesters has been the cause of at least part of the digester explosions. When one does explode it generally wrecks the building containing it. It is, therefore, very inexpensive insurance to have the digester made right in the first place."

Biggs precision is proven by the number of Biggs Rotaries in use today that have been in continuous use for 20, 25 and even 30 years. Send for the interesting Biggs Book on Rotary equipment.

THE BIGGS BOILER WORKS CO. Seneca Place and Case Ave. **Akron, Ohio**